

# 24<sup>th</sup> Annual SRCC/SURC 2022

Hosted at Buffalo State College



**SURC 2022**  
SUNY Buffalo State College  
Buffalo, NY  
Saturday, 23 April 2022

## Buffalo State Student Abstracts

### Table of Contents

Artistic Displays and Performances .....	2
Oral Presentations .....	4
Poster Presentations .....	15

## Artistic Displays and Performances

### Legacy in Dance

Alijah Giscombe, Evelyn Grapes, Janiah Lawrence, Carly Nolan, and Manny Stephens

Faculty Mentors: Professor Naila Ansari and Mr. Salvatore Giangreco-Marotta

The Buffalo State Dance program's spring semester concert, Legacy in Dance, combines a video montage with live performance to celebrate dance at Buffalo State College. As part of the 150th Anniversary celebration, Legacy reflects on collaborations between faculty choreographers and student artists over the past three decades. Performance at Buffalo State offers the opportunity to dive deeply into why and how dance is created and experienced. The performers represent students across campus who come to dance via many pathways: the Theater Department's Dance program minor; the School of Arts and Sciences B.A. in Arts and Letters major; and those from outside the traditional curriculum with a passion for movement. This presentation explores a variety of approaches to the creation of dance, as well as several genres and their significance to the art form.

### Wastelands: A Firsthand Perspective on Consumer Culture

Jonathan Bolt

Faculty Mentor: Professor Yola Monakhov-Stockton, Art & Design

Spotlighting waste created by the overconsumption of goods, this project exposes flaws in American consumer culture and its underlying ideologies and labor practices. Photographed in the form of thrown away items at a thrift store where I am employed, transforming objects such as toys, electronics, plastics, Christmas decorations, etc. into subject matter for the creation of artwork. My aim was to document this form of waste by means of a process called photogrammetry, thus producing full three-dimensional documentation of the consumer waste I've encountered. My work combines photogrammetry scans to create altered 3D landscapes made entirely of wasted consumer goods. The artistic impetus is to overwhelm the viewer with the sheer quantity of objects presented. This work reflects on the number of items we purchase and the speed with which these items inevitably become waste, posing questions about our habits as consumers. My works take inspiration from sublime landscape painting, and updating this tradition, convey our awe not for the landscapes themselves, but for wasteful behavior, consumer culture, and an endless desire for more stuff.

### Innovation in Vegas: Travelling to the AWFS Fair

Susan Koloski

Faculty Mentor: Professor Sunhwa Kim, Art & Design

In July of 2021, the Association of Woodworking and Furnishing Suppliers (AWFS) held its biennial fair and student design competition in Las Vegas, Nevada. AWFS is the largest national trade association in the United States which represents the interests of many companies that supply the home and commercial furnishings industry. A Wood/Furniture Design Major at SUNY Buffalo State College, Susan Koloski's piece, Revolution, was chosen as a finalist to participate in the competition. This opportunity also presented important challenges, such as, learning how to ship a piece of art across country, networking oneself in a group of peers, and being savvy with expenditures and travel fees. The Undergraduate Travel Research Award was used to offset the cost of air fare; this was helpful because at that time the price of materials used to build the shipping crate were unprecedentedly high.

The AWFS Fair is an immersive learning experience for anyone interested in production, technology, machinery, and furniture making. From booths occupied by the largest tool makers showing the latest technology, to master creators who have been in the field for decades, there is a wealth of knowledge to be found at this fair.

## Overlooked and Victimized: Celebrating and Remembering African Americans

**Bree Gilliam**

Faculty Mentor: Professor Lin Xia Jiang, Art & Design

This creative project focuses on celebrating and commemorating eight individuals in the African American community through portraiture. Throughout history, portrait paintings were used to honor and remember the deceased and influential people. In this project, four of the eight portraits include prominent individuals deserving of celebration, such as Dr. Kathrine Conway-Turner, Assemblywoman Crystal Peoples-Stokes, David Driskell, and Cariol Holloman-Horne. The remaining four portraits include those who have faced and lost their lives to violence and racism and deserve to be remembered, such as Isaac Woodard, Breonna Taylor, George Floyd, and Daniel Prude. The oil paintings are painted on canvases that range from 18 inches by 24 inches to 24 inches by 36 inches. The methods of modern and contemporary painters such as John Singer Sargent, Jordan Casteel, and Kehinde Wiley were studied and applied to ensure the best results. So often, people view these overlooked and victimized individuals as statistics or names that many will forget. However, this project is significant because it acknowledges the humanity of these critical people.

## Oral Presentations

### Diversity and Distribution of Cyanobacterial Inteins

Angelina Wheeler

Faculty Mentor: Professor Olga Novikova, Biology

Inteins are intervening sequences that excise themselves from a precursor protein post-translationally and splice the flanking polypeptides, exteins, to produce a mature protein. This reaction, called protein splicing, requires no metabolic energy and no cofactors. Although inteins are most frequently found as a contiguous domain, some exist in a naturally split form. In this case, the two fragments are expressed as separate polypeptides and must associate before splicing takes place, termed protein trans-splicing. Inteins are broadly distributed in single-celled organisms across all domains of life. Among bacteria, cyanobacterial species are rife with inteins, with almost every sequenced genome carrying at least one intein, and some carrying up to sixteen. Cyanobacteria play a vital environmental role as photosynthesizers and diazotrophs, and are thought to have been responsible for the Great Oxidation Event 2.4 billion years ago. Cyanobacteria carry a naturally split intein that interrupts the DnaE protein, the main catalytic subunit of bacterial replicative polymerase III. Although the DnaE intein is a valuable tool for protein tagging, purification, and synthesis, little is known about evolutionary history of the DnaE inteins or their biological roles in the host organisms. In this study, we used a bioinformatic approach to mine inteins from cyanobacterial genomes and assess their diversity and distribution, and to derive insights about the evolutionary history of the DnaE intein. In total, we found nearly 500 inteins in 361 cyanobacterial species. The majority of inteins were inserted in replisome proteins, with DnaE inteins making up over half of all inteins found. We then examined DnaE inteins' genetic loci for insights about the history of this split intein. Our preliminary data indicate that the common ancestor of the split DnaE-intein was a contiguous intein carrying a homing endonuclease. After the 'splitting' event, two parts of the gene drifted apart and can be found as many as 6.6 Mbp apart on the chromosome. This suggests a potential regulatory role for the split DnaE intein, as the two parts of the protein precursor must find each other for successful trans-splicing and formation of a functional protein.

### The Global Economy and Environment are Intertwined

Nina Miles

Faculty Mentor: Professor Peter R. Yacobucci, Political Science and Public Administration

As a result of the ever-growing global population, carbon emission levels are at a record high. This is a direct consequence of industrialization, the more a country produces, the higher the rate of carbon emissions will be released into the atmosphere. Climate change will affect everyone, although how an individual country will react will vary depending on the status of its economy. As a country's economic development progresses its environmental damage/condition will be ignored until a certain level of wealth/productivity is reached. Then a country's environmental policy will shift to better protect the environment. By running data from every country through statistical models on both SPSS and Stata, collected from the World Bank and the Sustainable Development Report, I was able to conclude that there is in fact a positive relationship between buoyant economies and carbon emissions. Due to economic instability, developing countries, especially those facing high poverty rates, will face the adverse effects of climate change at a much higher rate compared to developed countries. I theorize that after enduring economic instability, a country's environment is going to deplete before it can improve in response to economic gain. In order to reduce the hardships impoverished countries will endure, the global community must implement a climate policy that will meet the needs of each individual country. This policy must not

only align with the Sustainable Development Goals developed by the UN, but will assist in reaching the goal set by the Paris Climate Agreement, which is to keep the rise of carbon emissions under two degrees by 2030 (United Nations, 2022).

## Hate Crime Underreporting

**Nathan Vigil**

Faculty Mentor: Professor Peter R. Yacobucci, Political Science and Public Administration

To begin the main goal of this research is to achieve some sort of understanding as to why there is such a significant gap in the reporting of hate crimes. Understanding this gap is important because it has a strong mental/emotional effect on such a large portion of our population within the United States of America. As in every problem, we cannot solve it unless we view the issue clearly, underreporting prevents us from doing just that. To give some insight Hate Crime is a crime committed with the motivation being hostility to the victim as a member of a group (Nolan and Akiyama, 1999; Walters, Brown and Wiedlitzka, 2016). The scope of this research is informed by the collection of hate crime data, containing details about offenders, reoffenders, and victims, along with other factors. The current state of this research topic is expanding. Research on Hate crimes has increased as a result of recent social upheaval towards the treatment of minority groups (i.e. Sexual Orientation, Gender, Race, Ethnicity). The bulk of this data will be derived from the FBI hate crime report and the National Crime Victimization Survey. These two data sets are two different takes on how to collect data on hate crimes. The FBI hate crime data set is comprised of volunteered data from police departments which are sent to the FBI. This leaves gaps due to two main reasons. First is that reporting the hate crimes that occurred in a given area may affect the value of homes amongst other things, simply said, no one wants to make their area seem bad. The second is that there is no requirement for law enforcement to report the hate crimes to the FBI from a federal law standpoint. Now the National Crime Victimization Survey (NCVS) offers a different stance as they collect the data from individuals through a survey approach. This records what occurred, if damage was inflicted, relationship to victim along with many other factors. This offers a more comfortable way of reporting a hate crime allowing for more truthful/accurate reports.

## Steroids in Professional Sports

**Ryan Chwojdak**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper I will examine the use of steroids in the world of professional sports by comparing two documentary films: *Screwball* by Billy Corben; and *Bigger, Stronger Faster* by Christopher Bell. Both filmmakers approach the issue with distinctive techniques, often deploying humor to depict serious situations, but cutting to the core of a cultural crisis for athletes. Many athletes have resorted to using steroids due to a “winning at all costs” mentality related to athletics even if these drugs were illegal or frowned upon by most of the American public. Corben shows that the use of steroids by multiple athletes in the MLB changed the game and set poor ethical standards for children around the world. *Bigger, Stronger Faster* illustrates a similar trend in professional wrestling. In both films, we see devoted fans discover that their heroes have been cheating on their journey to greatness and fame. This project will examine how performance-enhancing drug controversies have changed the games as well as the public’s view of sports over the years, and how these popular documentaries uniquely illustrate the phenomena.

## Perfectionism in Women's Gymnastics

**Jenna Dota**

Faculty Mentor: Professor Meg Knowles, Communication

In this paper I will explore the idea of perfectionism in women's athletics. Specifically I will analyze the environment of women's gymnastics in the United States. I will show how the desire to achieve greatness can have disastrous consequences if not addressed. This climate of comparison can lead to major sports injuries. Even greater, this can result in psychological issues such as eating disorders and deep fear of failure. In Erin Lee Carr's *At the Heart of Gold: Inside the USA Gymnastics Scandal*, we get a full view into the world of women's gymnastics and how fear played a role in the sexual abuse scandal by doctor Larry Nassar. I will analyze how the issues are presented in this documentary and the ways in which female athletes struggle to survive life in the spotlight. I will also examine these issues in light of Tomlinson and Yorganci's research on male coach/female athlete relationships in sports.

## Affirmative Action Policies Are Needed to Diminish Educational Inequalities

Jiselle Abraham

Faculty Mentor: Professor Peter R. Yacobucci, Political Science and Public Administration

Having affirmative action policies put in place would help to diminish educational inequalities. This literature review is an examination of the prospects of affirmative action and the role it plays in school admissions. This research is geared towards showing that affirmative action is only a response to combating racially driven institutions, not only in America, but also used as an example in this research is other parts of the world that may experience racism or their own version of inequality. Showing that affirmative action should still be used as a tool to combat issues that can still go unresolved. The statistical aspect of this research is based in the United States and meant to show how affirmative action plays a role in an increase of percentage of high school and college graduates among minorities. With two different models, running a Binary Logistic Regression model and a Linear Regression model, showing if affirmative action policies matter to essentially college minority graduates and what the determinants of affirmative action are when applied to a set of variables. What's shown is that when adding in other factors, for instance, median household income, we see the effects affirmative action may have on it but also the effect median household income has on high school and college completion and how it can even play into other aspects such as minority owned businesses. The research conducted here is important because it keeps alive the awareness of policies such as affirmative action and the social disparities it continues to try and correct not only in America but in other parts of the world, too

## Methadone Maintenance: The Significance of Identity in the Recovery Process

Courtney Coseglia

Faculty Mentor: Professor Thomas Weinberg, Sociology

Marsh B. Ray's study, "The Cycle of Abstinence and Relapse among Heroin Addicts," concludes a critical aspect of recovery from drug addictions is whether or not the addict can adopt a new identity as a "non-user" (Ray, 1961). While this conclusion is sound, its application to those who are recovering from opioid abuse through methadone must be considered. The essence of methadone maintenance implies a dependency on a new drug, which may indicate a discrepancy between Ray's conclusion and its applicability to methadone users. Methadone maintenance is a medication assisted treatment process for various opioid addictions. It is prescribed to block withdrawal symptoms and opioid cravings. Methadone maintenance purportedly allows the user to return to a more normal and productive life. However, its negative impacts

on the user's life and ability to progress are significant. This study examines the level of progression that methadone allows in the recovery process by sociologically analyzing the perspective of the methadone user on their identity transformation (or lack thereof) and the accompanying obstacles from opioid abuse to recovery. Data collection for this study is currently being conducted through interviews with methadone users, with questions pertaining to the dynamics of their identities throughout their lives. Other questions ask about their level of satisfaction with their lives and the progress they have made. At this point in my research, I have found that most participants' identities remain unchanged, and they feel that they have made little progress in their recovery aside from the cessation of secondary deviance and avoidance of prison or untimely death. Several people I have interviewed feel shackled by methadone, often alluding to the common metaphor of "liquid handcuffs". This suggests a reciprocal relationship, and possibly a reciprocal causation, between an unchanging identity and inability to progress toward a life they feel is worth living.

## Culture's Inescapable Grip: Uncovering a Masked Rhetoric

Aliyah Carroll

Faculty Mentor: Professor Ann Liao, Communication

How many times did a message persuade you today? On your commute here, how many billboards did you encounter? While scrolling through your Facebook feed, did you read any motivational quotes? In the morning, when you poured your bowl of cheerios, was there an ad embedded in the cereal box? The average person would most likely shrug, give a strange look, and say, "I don't know," when asked how many times he or she has been persuaded. While I can't give you an exact number for how many times you fell victim to a persuasive message today, I can tell you this: By the end of the day, you will have received around 400 persuasive appeals from marketing vendors alone. The purpose of my research is to provide insight on how we are persuaded, to establish an understanding on how our behaviors, emotions, values, morals, and actions, are all influenced. Using modern day rhetorical criticism methods, I will explore how our culture uses values, myths, and fantasies, to seep messages into our everyday life. Ultimately, my research focuses on how these methods are ingrained into our culture and why the impact can be both encouraging and detrimental to the state of our mental health.

## Vocal Training for Male Voice: Learning to Teach by Teaching to Learn

Daniel Fronckowiak

Faculty Mentor: Professor Holly Bewlay, Music

As a singer of 30 years with extensive professional experience, the researcher became an undergraduate student to obtain the degree and certification required to teach music in public school systems. Having never received any private voice instruction, the researcher did not know how to produce vocal music. By learning the fundamentals of vocal technique, the researcher witnessed mentally and physically at odds with the cumulative body of experience. The experience caused curiosity on how to train this particular male voice using teaching as a tool to learn the new vocal technique. The experiment lasted for four weeks. During the first two week (five days a week), the subject learned the new vocal technique accompanied by 20 minutes of daily vocal technical exercises (DVTE). During the third week (four days a week), the subject was able to sing 30 minutes of DVTE without feeling physically tired, and started to teach 10 minutes sessions to four different students for four days. During the last week of the experiment, the subject was able to sing 45 minutes of DVTE without physical or mental fatigue and taught 10 minutes sessions to two to four students for four days. Practice and teaching journals were kept to collect data for any interesting findings. The findings include 1) how air functions to change pitches in human voice, 2) how

teaching increases self-awareness for own learning. An additional surprising and profound finding is that there was a close relationship between emotional state and learning new material. Unaware of this discomfort when learning a new material caused an unpreparedness for the emotional and psychological challenges to be faced. This project involved a study of vocal technique that usually happens over the course of 7 academic semesters. The timetable of this project according to the intensity of the Lee Silverman Voice Training methodology shortened the learning process to 4 weeks. Learning about the process of learning, and how one engages in that process when assuming the identity of a learner prepares learners to finally learn. PowerPoint presentation will be used for this oral presentation.

## James Cameron's Story of Science Fiction v. Jodorowsky's Dune

**Dawson Joyce**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper, I will compare and contrast two different documentaries revolving around the genre of science fiction in the landscape of cinema: the 2018 television miniseries *Story of Science Fiction*, created by James Cameron, and the 2014 feature film *Jodorowsky's Dune*, directed by Frank Pavich. On the surface level, these two couldn't be more different, as *Story of Science Fiction* is an exploration into the genre as a whole that ponders the question "What if...?" regarding several sci-fi concepts, while *Jodorowsky's Dune* details the troubled history of cult film director Alejandro Jodorowsky's unsuccessful attempt to adapt and film Frank Herbert's legendary sci-fi novel *Dune* in the mid-1970's. However, looking closer, the un-produced *Dune* adaptation would help pave the way for a successfully produced film like Ridley Scott's *Alien*, one of the seminal sci-fi films discussed in *Story of Science Fiction*'s first three episodes: *Alien Life*, *Space Exploration*, and *Monsters*. Most significantly, bio-mechanical artist H.R. Giger was part of the special effects team on both projects, shaping the films' visual direction with his conceptual illustrations and creature designs. Additionally, *Alien* co-screenwriter Dan O'Bannon was to be the director of special effects on *Dune*. The study will delve deeply into how some of the greatest stories of success and failure in Hollywood can come from the same place. The factors leading to or preventing a film's development, including financing and creative synergy, can provide lessons for younger generations of filmmakers.

## Power Behind the Muscle: Link Between Athletes in Contact Sports and the Emergence of CTE

**Moises Rijo**

Faculty Mentor: Professor Meg Knowles, Communication

My research project will synthesize a discussion of two documentaries focused on former NFL football players who were charged with murder and recent research on chronic traumatic encephalopathy (CTE). Aaron Hernandez is the subject of the docuseries *Killer Inside: Mind of Aaron Hernandez* (2020) directed by Gino McDermott, and O.J. Simpson is the subject of the standalone film *O.J.: Made in America* (2016) by Ezra Edelman. I will examine how the similarities of circumstances, behaviors, & actions of these two sports professionals show how devastating CTE can be not only to the man, but to their friends and families. As long as O.J. Simpson is still alive, it is not possible to confirm a diagnosis of CTE. However, Hernandez was confirmed to have severe CTE post-mortem, and his case can be used as a proxy to identify some of the traits of this condition & apply the same guidelines to determine whether CTE may be responsible for O.J. Simpson's post-career legal woes. These notorious former athletes who went off the rails (especially in criminal and legal terms) may prove to be a boon to the argument that CTE is not only a serious threat to the NFL, but seriously destructive to society as well.



## Resurgam: A Wedding Dress and the Fabric of Identity

Grace Croop

Faculty Mentor: Professor Andrew Nicholls, History and Social Studies Education

“No man or boy, within that part of Great Britain called Scotland...will wear or put on the clothes commonly called Highland Clothes (that is to say) the plaid...or any part whatsoever of what peculiarly belongs to the highland garb...”

The Proscription Act of 1746 put in place by the Parliament of Great Britain acted as a means to suppress several forms of the Scottish culture throughout the country: including the well-recognized woven tartans of clans and royal houses. As a result of this restriction, several existing weaving mills, skilled individuals of the trade, and their work had to cease, or continue their work in secret despite the law. However, the prohibition of tartan and its uses did have some limits and technicalities in its wake. The declaration only banned the use of Highland dress for men and young boys, but did not extend that same constraint toward women. As a result, several examples of feminine dress which utilize the familiar plaids were recorded toward the conclusion of the century. One such garment which survived the period: is the wedding dress of Isabella MacTavish, dated from January 1785. The significance of the gown in question is present within the fabric used throughout: a woven plaid with the formal dress colors of the Fraser clan. In order to address the question of ‘I Wish I’d Been There’ posed by Dr. Nicholls, Bryon Hollinshead, and Theodore Rabb: this thesis analyzes both the creation of MacTavish-Fraser’s gown, and how the bans against the culture of the Scottish Highlands affected both the process and future of the craft, and Scotland as a whole.

## The Fall of the Berlin Wall and What it Meant for East and West Germans in 1989

Rebecca Lamastra

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

This paper will explore the divide between the people and cultures in Central/Eastern Europe versus those in Western Europe, and how they perceived the fall of the Berlin Wall. After its fall, Germany may have been politically reunified, but in many ways, still remained divided. This paper will also explore the lasting effects of the fall of the Berlin Wall on West and East Germany, as well as how it is perceived to be a symbolic end to the Cold War in Western History. There is a large divide between how people in Central/Eastern Europe view the end of the Cold War and the end of the Soviet Era, compared to the viewpoints in the West. For Western Europeans, the fall of the Berlin Wall symbolizes a reunification of Germany and an end to communist rule in the region. However, for Central and Eastern Europeans, the year 1989 and the fall of the Berlin Wall had a different meaning. Information will be gathered from a number of primary sources, including videos of news broadcasts and interviews to show the prevalent struggle between the Capitalist and Communist political systems and economies that existed in West and East Germany. Personal accounts from citizens residing in East and West Germany during the fall of the Berlin Wall will be used to show that the reunification of Germany was an emotional and impactful event of Democratic change for both East and West Germans, as well as the world as a whole. These sources will provide insight to the differences in culture that existed in East and West Germany, while also showcasing the different sides of the wall and the viewpoints of those living both inside and outside the wall. Famous speeches, from those such as President Ronald Reagan will also be utilized, to show the Western hemisphere’s stance and involvement in the taking down of the wall. Other sources include books written by historians about the fall of the Berlin Wall, that also contain some background information on Germany before it was divided and after.

# The Women's Liberation Movement: We're Still Beautifully Angry, and You Should Be Too

**Cait Malilay**

Faculty Mentor: Professor Meg Knowles, Communication

This research project will take the form of a podcast analyzing the women's movement of the 1960s and 1970s, and show how women were portrayed in the news media at the time, reflecting the reception of their cause by the public. To explore this history, I will analyze the documentary film, *She is Beautiful When She's Angry* (2014), directed and produced by Mary Dore, to investigate how anti-feminist stereotypes were re-defined and weaponized as a motivation for empowerment. It is notable that this happened in a time when most contemporaneous revolutionary social movements, such as the anti-Vietnam protests, Students for a Democratic Society and Black Power were mostly male dominated, as *Variety* sums it. The Women's Liberation Movement included a wide variety of women organizations to combat the patriarchal system. Rhetorical strategies used by the women's liberation movement, and the effective employment of ethos, logos and pathos in their arguments influenced a generation. The podcast will include an interview with an academic who specializes in feminist theory. In addition to the documentary film, the study will draw from feminist theory, discuss how race played a role and the ever-changing definition of masculinity and femininity in relationship to the tactics of the women's movement.

## Student Recruitment and Advertisement for Music Department

**Leonardo Bartholomew**

Faculty Mentor: Professor Holly Bewlay, Music

Three years ago, Buffalo State Music Department experience lead the researcher to talk about it with his high school colleagues and caused to assist the high school students to fill out college application for This experience inspired the researcher to do this senior capstone project. The researcher was interested in finding out what the current students and faculty experiences are, and it's influence on prospective students. To investigate, a qualitative survey questions were created by the researcher. Individual interviews (n=20) were conducted by the researcher. Various experiences were shared and documented on a video as a part of the interview results. The interview results were mostly positive and common themes included a sense of belonging and community. 15 out of 20 interviews were completed and the rest of the interviews will be conducted during the last two weeks of March. There will be 14 plus in person or zoom visits to local and NYC high schools sharing a prepared video including the interviews and conducting a Q&A sessions during early April 2022. The impact of the video presentation on the particular prospective students will be surveyed during Q&A. Significance and conclusion will be shared at the presentation based on the interview results and Q&A sessions with the prospective students. PowerPoint presentation will include video and audio.

## Interpretation of Love: Poetry, Music, and Visual Art

**Caitlyn Faddis**

Faculty Mentor: Professor Holly Bewlay, Music

Since the beginning of history, poets, musicians, and artists have created art in the name of love using various languages and mediums. The best type of expression about love is often created from the artists' own personal experience. These poems, music, and visual art pieces about love are interpreted by

performing artists and viewers. Four musical compositions carefully chosen by the researcher will be interpreted in two performances. As a service-learning project, the performer will present for the South Buffalo Community Association and have conversations about the interpretation with the audience on March 18th . As a lecture recital capstone project, the singer will present the lecture and perform on March 20th . Both performances will be a part of the researcher's applied learning project. A musical composer, Giulio Caccini and a poet, Alessandro Guarini wrote about the idea of an undeniable and committed relationship in *Amarilli, mia bella*. Music for *The Cat Duet* was written by Wolfgang Amadeus Mozart about two lovers where the woman was enchanted as a cat and the man tries to understand her meows by adapting her cat language. Charles Ives wrote both the music and the text for *An Old Flame* based on the love of his life, Harmony Ives. The text shows the man's undying love for the woman into the late stages of their lives. *Sure on This Shining Night* was composed by Samuel Barber, and the poem was written by James Agee. Agee found inspiration for the song through the passing of his father when he was six. The song expresses the love between the living and the dead. Each song will be paired with an image of visual art piece chosen by the singer as a tool of her own interpretation. By choosing these particular art pieces from various artistic periods, the presenter expresses how love is a universal language. The lecture will consist of PowerPoint presentation of historical background of the composer, poet, poetic/musical analysis, and an interpreted connection to the particular art pieces. A video/audio recording will be included.

## The Fine Line Between Understanding and Glamorizing Trauma

**Marek Heitzenrater**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper I will be exploring the archival documentary, *The Killing Of America* by archivist Sheldon Renan (1981), and particularly its representation of criminal cases. As our culture shows a growing curiosity about the macabre details of true crime, with the growing popularity of true crime documentaries on platforms such as Netflix, this documentary has gained in relevance over time. I want to evaluate whether a sensational documentary of this kind (which frequently sets out to shock while simultaneously drawing attention to psychological motivations for the crimes depicted), has any broader purpose than to exploit horrible events, and to reflect on what that reveals about the growing consumption of this type of media. *The Killing Of America* is a very grim and unflinching look at America's most infamous crime cases pre 1980 in an effort to outline a hypothesized "decline in American values and society." Through analysis, I will show that the unethical and disrespectful methods used to produce the film are resurfacing in the contemporary docuseries, which have become a staple of true crime content. The paper will draw this through-line by analyzing the film devices in the documentary, exploring the questionable ethics behind them, and relating these to our current ethics in true crime content. My hope is that the reader will develop a greater understanding of how documentary methods used in *The Killing Of America* have contributed to a decline in American ethical standards for this kind of content.

## "Restrepo" vs. "The Battle of San Pietro" Evolution of the Combat Documentary

**Scott Johnson**

Faculty Mentor: Professor Meg Knowles, Communication

I plan to compare and contrast the filmmaking of "The Battle of San Pietro" (John Huston, 1945) and "Restrepo" (Tim Heatherington and Sebastian Junger, 2010). *San Pietro* focuses on a World War II battle in central Italy and *Restrepo* takes place in Afghanistan. The two conflicts that these films portray, the circumstances surrounding them, and the attitudes towards them could not be more different from one

another. Just as the conflicts were different, so were the films. The evolution of documentary technique and the evolution of the cultures of opinion that surrounded them both play a large part in the films' representation of the events. The exploration of contributing factors in the construction of both films will be the focus of this comparison. In particular, I will examine the technology differences between the two films in light of what "Restrepo" could accomplish that "The Battle of San Pietro" could not due to those limitations. This includes the difference in technology and resources that the filmmakers had access to. "The Battle of San Pietro" was shot on heavy, 16 mm cameras by army cameramen, and "Restrepo" was shot on small digital cameras often carried by the soldiers themselves. There will also be consideration of the public's perception of the conflicts and how that reflects the way the films were received back home and the ultimate effect they may have had. This includes authenticity and the use of reenactments by John Huston in contrast to the cinema verité of "Restrepo."

## The Sound of Nature: Text Painting in "To The Sea" by Edward MacDowell

**Melanie Bebak**

Faculty Mentor: Professor Emily Boyce, Music

Edward Alexander MacDowell (1860-1908) was an American pianist and composer who captured scenes from nature in sound. A composer of many works, he created several sets of piano pieces based on nature. Some of his most notable collections include the Woodland Sketches, Fireside Tales, and Sea Pieces. These compositions conjure an atmosphere that paints the titles, whether in the context of one select piece or through the entire collection. One such element that is employed throughout his works, is text painting. Text painting, also referred to as word painting or tone painting, is the use of music in the form of chords, lyrics, and movement to create a literal meaning or interpretation of a title. A great example of text painting in MacDowell's compositions can be observed in a piece called "To the Sea," included in his collection, "Sea Pieces". In this piece, MacDowell interprets a visual world full of rich colors and striking contrasts through sound. He takes advantage of the full range of the piano in order to create such strong imagery that one cannot help but hear the crashing of waves amidst the vast ocean. Both the serenity and the ferocity of the vastness can be recognized in different sections of the music. MacDowell utilizes motion up and down the keyboard, rich sonorities, and a broad dynamic range throughout the piece in order to develop this scene and create a world that is as vivid as it is striking.

## War for Ukraine

**Joshua Nielsen**

Faculty Mentor: Professor Meg Knowles, Communication

My research project will address the 2022 crisis in Ukraine as the world is watching Russia's aggression continue to escalate. I will analyze the 2015 documentary, *Winter on Fire: Ukraine's Fight for Freedom* (directed by Evgeny Afineevsky) for evidence of how the 2014 Euromaiden civil uprising could have led to today's political situation. The film documents the transformation of a peace-loving nation to one willing to sacrifice lives for their principles. How does this representation of the slow buildup of the protests match with contemporary news and historical records? Will Zelensky, a new leader leaning toward democracy in place, be able to successfully lead Ukraine in an effort to fend off Russia once again? I will also analyze the 2022 documentary, *Two Men at War* (produced by George Stephanopoulos) to research its presentation of both Zelenskyy and his new leadership in Ukraine and Putin, with his long-lasting grip on Russia and its government. I will examine the world's reaction to Russia's attack on Ukraine in 2022 and how it is continuing to deal with the ongoing conflict.

## Can Music Alone Cause an Emotion? An Investigation into Jenefer Robinson's Deeper Than Reason.

Nicholas Stanford

Faculty Mentor: Professor Leigh Duffy, Philosophy

In my research, I investigate the extent to which music can cause emotions in a listener, and the necessary conditions for a musically induced emotion. Prompted by Jenefer Robinson's book, *Deeper Than Reason* (2005), I designed a research study that provided participants with emotionally expressive music and investigated their physical, emotional, and cognitive reactions to this music. Results of the study showed an emotionally related evaluative cognitive event was necessary to having an emotion with music. Without this kind of cognition, I found that participants were likely to experience what Robinson defines as mood states, supporting the conclusion that music alone cannot cause an emotion. To conclude, I emphasize the importance of further research into both musically induced emotions and the role cognition plays in human emotion. This research was conducted in correlation with my undergraduate Honors Philosophy Thesis project, which I successfully defended during the Fall 2021 semester. An edited version of this paper is submitted for publication in an undergraduate academic journal, and it is my intention to further research the interplay of music and emotions in future graduate work.

## The Effect of Internet Speeds on High School Graduation Rates in American Counties

Sarah Chapman

Faculty Mentor: Professor Peter R. Yacobucci, Political Science and Public Administration

What impact does internet speed have on graduation rates? Many things can impact high school graduation rates, and internet speed is one of those things, especially in a world impacted by the pandemic. This paper looks at the impact of internet speeds on graduation rates in the U.S. This is because according to research into past studies, internet speeds had noticeable effects on graduation rates at single school levels. The county level was chosen to study in order to get a consistent unit of measurement while still having a large number of data entries. Looking at roughly 1900 counties across the U.S., the data showed that both upload and download speeds had significant effects on graduation rates. I also consider the effects of additional determinants of high school graduation rates, including population size, gross domestic product (GDP), average housing costs and political alignment. Additionally, internet speeds both pre and post pandemic were taken into account. The goal of this study is to analyze how much of an effect internet speeds have on education, in order to work towards formulating a plan to improve education based on the data.

## High on the Hog: How African American Food Transformed America (Netflix, 2021)

Maggie Benjamin

Faculty Mentor: Professor Meg Knowles, Communication

The host of the Netflix documentary *High on the Hog*, Stephen Satterfield, tells the story of African American foodways to North America. This is important to us all because a lot of the foods that were brought to North America are foods that people of all ethnicities consume each day without knowledge of their origination. Satterfield explores the ways at which African American food has been integrated into

many cultures. Therefore, African American food is very important in African American culture and every other culture alike. It is what unites us with our ancestors, people of the present time, and all the future babies to come. For this reason, Satterfield goes into depth about how African American food benefits us all. He explored foodways to North American in a way that brought us on a journey with him. A journey through his own experiences, as well as the experiences of the people he acquainted himself with to gain more knowledge about the history of our food. Aside from watching *High on the Hog*, I have also analyzed three articles related to its contents, and two critic reviews. While conducting this research, I learned more about which foods originated from African American foodways, and how they've made it as far as they did.

## Viewing Our Food Up Close in *Food Inc.* & *Super-Size Me*

**Muse Muse**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper I want to bring to attention, the production and the reality of the food industry which is sugar coated and swept under the rug by these big companies. I want to compare and contrast two documentaries, *Food Inc.* (Robert Kenner, 2008) and *Super-Size Me* (Morgan Spurlock, 2004). Both documentaries address the corporate takeover of our food chain, and the problems with farming and production of the food we eat and the effects it can have on us. *Food, Inc.* uses author and Eric Schlosser as an expert narrator, and interviews titans of healthy food research such as Michael Pollan. Spurlock presents the same subject from a very personal point of view, offering himself up as the center of an unofficial experiment to “super-size” all his meals for a year to learn the results. My paper will question how these documentaries each approaches the emotional side of the story and the factual side of story. I will talk about the reception and reaction that each documentary got and discuss the impact of each documentary filmmaker’s style. I believe it is really important to know what you are putting inside your body, so you can live longer, healthier lives. Even though these films were more than a decade ago they are very much still relevant today and that says a lot.

## Seeking Racial Justice: *13th* and *True Justice*

**Tariq Nelson**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper, I will analyze two documentaries that reveal how African Americans have been oppressed systematically and economically. I will discuss the relationship between “*13th*” (Ava du Vernay, 2016) and “*True Justice: Bryan Stevenson’s Fight for Equality*” (George, Teddy, and Peter Kunhardt, 2019). Both films explore and demonstrate the inequality of the justice system towards people of color, focusing mainly on African Americans. In the paper, I will dive deeply into DuVernay’s construction of a representation of the complicated history of specific laws that promote the economic oppression visited upon African Americans, that still impact us to this day. Consideration of *True Justice* will provide examples of the struggle of an Alabama attorney to bring fairness into the legal system through his organization The Equal Justice Initiative. The examples in the film illustrate racial discrimination in the criminal justice system. This is a matter of importance because in order to change your future you have to understand and educate yourself on the past. Change can only happen when problems are addressed. As long as we continue to stay oblivious to the attacks against our youth and our culture the longer we will remain slaves mentally. How can documentaries contribute to bearing witness and encouraging an evolution of thought?

## Poster Presentations

### Bother & Broomsticks: Paul Dukas and L'apprenti Sorcier

Jenna Agro

Faculty Mentor: Professor Carolyn Guzski, Music

Composed in 1897, *L'apprenti sorcier* [The Sorcerer's Apprentice] by Paul Dukas (1865-1935) is a prime example of expert musical imagery and compositional skill. The symphonic poem, based on Johann Wolfgang von Goethe's poem of the same name, "Der Zauberlehrling," follows the story of a young, inexperienced magician who decides to have a little fun while his master is away. Things quickly get out of hand and the apprentice accidentally animates an entire army of broomsticks to do his bidding. The term "symphonic poem" was first used to describe Franz Liszt's 13 symphonic works beginning in 1848, through 1858, and then concluding with the 13th and final work in 1882. Dukas's most famous piece, *The Sorcerer's Apprentice* draws inspiration from several other sources while still staying true to many of the compositional values of the Romantic Era. This project will explore the limits of musical imagery and just how masterful Dukas's compositional technique is. The main theme, first heard by the bassoon, is one of the most recognizable melodies to ever be composed. It represents the broomsticks coming to life at the apprentice's command. This was visually depicted in Disney's *Fantasia* (1940) and again reprised for the film's sequel *Fantasia 2000*. (2000) Both films contain an array of musical vignettes. Each piece included was given its own animated short. *The Sorcerer's Apprentice* is the only work selected to be used in both films. Dukas's expert use of orchestration and compositional technique combines both musical imagery and text painting in a way that solidifies it as one of the best symphonic works to date.

### The Millenniums of Music

Christopher Bailey-Robinson

Faculty Mentor: Professor Jane Sullivan, College Writing Program

This project explores the concept of how the vast history of music affects the lives of many generations of people. Music has been with humanity for many generations and through many periods of change and innovation in human history. In the 10th century was a man named Guido d'Arezzo who was, and still is, a very influential music theorist whose contributions still hold strong to this day. Guido invented music notation which revolutionized everything about music and how many famous composers such as Wolfgang Amadeus Mozart, Ludwig van Beethoven, Johann Sebastian Bach, Franz Schubert, and many other musicians would interact with the artform years later. The music from these various eras of music is radically different from contemporary music, and with this difference comes variations in ideologies and ways of thinking. As a result of D'Arezzo's theories, many artists and musicians came into prominence and shook the music theory to its core in numerous time periods. Music affects and influences how people think and is reflected in the music of specific time periods. I will explore (a) the history of music, (b) its affect culture, and (c) the specific musical events and masterpieces in specific time periods. Using this knowledge, I will be able to reflect on the effect music is having on what will become the history of today. Using music majors at an urban four-year public college in upstate New York, I will ask subjects to listen to three to four masterpieces from different time periods and collect qualitative data about the recollections of the history of the time period.

# Predictors of Internalizing Behavior in a High-Risk Sample of Kindergarten Age Children: Maternal Psychological Symptoms, Demographics, Substance Abuse, and Attachment

**Olivia Bell**

Faculty Mentor: Professor Pamela Schuetze, Psychology

The purpose of this study was to examine demographic and caregiving predictors of internalizing behaviors in a sample of high-risk kindergarten aged children. We hypothesize that maternal psychological symptoms (anger/hostility, depression, anxiety, and stress) during infancy, maternal demographic characteristics, and maternal substance use (cigarettes, alcohol, and marijuana) during pregnancy will predict internalizing behavior in kindergarten age children. In addition, we hypothesize that insecure mother-infant attachments during infancy will predict increased internalizing behaviors in kindergarten age children. The children in this high-risk sample were recruited on the basis of prenatal exposure to cigarettes. In addition, the sample was primarily low socioeconomic status and consisted of a large percentage of single-parent families. Participants consisted of 247 mother-infant dyads who were recruited at their first prenatal visit from one of two area hospitals. Mothers were interviewed during each trimester of pregnancy. Mother-infant dyads visited the laboratory when the child was 2, 9, 16, 24, 36, 48 months of age, and again when the child was in kindergarten. Each visit consisted of a combination of interviews and observational paradigms. Hierarchical multiple linear regression analyses will be conducted to examine predictors of internalizing behaviors. The implications of these findings for informing prevention and information efforts will be discussed.

## Somebody's Watching Me: Keyloggers

**Rachel Bell**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

A keylogger is also known as a "keystroke logger." They can be used in a malicious manner to record sensitive data or in a harmless manner such as a parent monitoring their child's activity online. Keyloggers can be hardware or software, which are installed on the computer through file attachments or social engineering. The hardware version is usually a USB plugged into the computer or embedded in the PC. The issue with using a keylogger is, it can be detected through file scans and systems security. Some places such as offices may even have lockouts on their employees' USB ports. This research study focuses on how an individual can install a keylogger on a computer using a Rubber Ducky without being detected. The Rubber Ducky bypasses a lockout by tricking the computer into thinking it is a keyboard. The programming language for creating the keylogger will be Python. The Rubber Ducky device needs to be programmed to act as a user on a keyboard using its own scripting language. The end goal of this project is to successfully install a keylogger on a computer in a short time period that won't trigger system security. Keystrokes are recorded and sent to the person who installed the keylogger's email address. A demonstration of the script will be shown for the programming of the Rubber Ducky as well as the code that creates the keylogger.

## DataBass for Buffalo Music Hall of Fame

**Prayushi Bhorania**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The Buffalo Music Hall of Fame (BMHOF) was created to honor the region's musicians and music history for the cultural enhancement and enrichment of the community. Database management system is a crucial



part of every organization to keep the data organized and to share data quickly, effectively, and securely across the organization. This research project will study how BMHOF can have an updated and easily editable database system. To conduct the research, information about the nominees at BMHOF will be gathered. The aim of this project is to have a structured database connecting the three main data tables which are Inductees, Nominees, and Memorabilia. The main focus of the research is to build the relationships between these three tables. The database platform that will be used for this research is Oracle Apex. The current raw data is in three different Excel spreadsheets and at the conclusion of this research project the data will be structured and stored in an online database environment. The online database will also be linked to an HTML or PHP page for easy access to information for the end-users. The Nominee table will have data being added periodically, and the data from the Nominee table will be moved to the Inductee table if the nominee gets inducted. The end result will also allow users to effortlessly view, add and edit the data into all three databases.

## Project C.O.S.M.O.S.

**Preston Bioceovich, Jacob Burns, Ryan Goddard, and Joe Guppenberger**

Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

C.O.S.M.O.S or Computer On-board Scientific Mobile Observatory System is an intelligent six wheeled robotic platform that will be controlled wirelessly and have a smart power system to provide constant power. The 2020-2021 senior design team began the project one year ago, and the 2021-2022 senior design team will improve upon the foundation of the previous group. C.O.S.M.O.S is a proof-of-concept model of the potential to enter the URC or University Rover Challenge in future years with a full-size rover. Potentially future senior design teams will continue to build upon the previous team's accomplishments until a full-size rover is developed.

## Children's Toys and How They Prime Them into Gender Stereotypes

**Elina Cerasani**

Faculty Mentor: Professor Dianne McCarthy, Elementary Education, Literacy, & Educational Leadership

This paper discusses the intentional separation of children's toys by gender and how that reinforces the negative ideas and biases set up for women and men in society. Throughout history, there has been gender segregation that has kept women and men from certain occupations and majors. Although in modern times this gender barrier has lessened, it still is a prominent aspect that prevents many people from pursuing degrees and careers outside of the gender stereotype. These biases are introduced to the next generation of children through their toys. According to research by Dinella and Weisgram (Gender-Typing of Children's Toys: Causes, Consequences, and Correlates, 2018), many toys that are created for children can impact the type of play that children engage in if they are categorized by gender and project gendered messages to the children. Dolls teach children to be nurturing, a trait that will encourage children to be more caring and understanding towards others. However, the toy is catered towards girls because of the stereotype of women being the main caregiver of children. The packaging is usually pink and stores place it in the girls' aisle, which deprives boys of an opportunity to learn those traits. These ideas encourage women towards nurturing careers such as teaching and push men away from them. Gender stereotypes and biases that are supported through these toys are negatively affecting women and men by placing them into boxes created by society.

## BERT-based Negotiation Chatbot

**Matthew Clifford**

Faculty Mentor: Professor Gang Hu, Computer Information Systems

Business negotiations are often hard due to conflicts of involved parties. Some negotiations can be not only time-consuming but also negative, resulting in the damages of business relationships when unexpected negative emotions grow. A solution to these problems is to automate negotiations with a robot. We propose a project to create a chatbot that can conduct business negotiations. For this project we will utilize BERT (Bidirectional Encoder Representations from Transformers) which is a deep learning natural language representation model that has a powerful bidirectional prediction and contextual understanding feature. The BERT model is pre-trained on an enormous amount of unlabeled data. The model allows high performance when it is fine-tuned to a specific task through additional training. The BERT model trains data by performing 2 tasks: MLM (Masked Language Model) which is used to predict the missing word(s) in close vicinity within a sentence, and NSP (Next Sentence Prediction) which is effective for the question/answer task. The first step in this research will be fine-tuning the model to our negotiation task, using more than a thousand bilateral negotiations experimentally conducted globally. Next, we will extend the MLM and NSP tasks to predict the binary result of a negotiation (successful or unsuccessful) and to generate an automated response to a human counterpart. The goal of our project is to have our BERT-based chatbot act as a business representative, helping two parties come to an agreement in a negotiation setting.

## Document Processing Software

**Azeem Cole**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The objective of this research project is to develop a software application for a company called Paychex. A part of this project is to stamp a PDF document with a QR Code that contains the appropriate information, especially an identification tag, to recognize when the document gets returned. The software application will have the capability to read the returned document and identify whether it was properly signed and retrieve the information from the QR Code that was placed on it. The first step of this project was to conduct research on the Java packages that can be used to implement the project and communicate the findings. A part of this software application will focus on analyzing and interpreting the document that gets returned. The difficulties of this project include several different ways that a document can be processed and returned. For example, the way the document is being scanned including the angle, the quality of paper, the language in which it is written (i.e., English or Spanish) as well as the location of the QR Code. The supporting software that is used during the project development are Jira, Eclipse IDE, and Visual Studio Code. The final product will differentiate between a properly signed document and improperly signed document. A properly signed document will then be stored in a database and an improperly signed document will be sent for manual review.

## Transportation: A Barrier to Success

**Alyssa Cook**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

This project aims to question what poverty and the lack of access to transportation look like in Buffalo, New York. After learning about poverty on a national scale and reading about the lack of access to transportation in many places across the United States, I want to locally observe this phenomenon and see how it affects people and poverty in real time. People who live in poverty often face transportation barriers such as the cost of a vehicle or even just the cost of gasoline and vehicle maintenance. Many times, people looking for work cannot even afford the public transportation to interviews. To collect information on this topic, the research method being used is the PhotoVoice method. Using this approach, 15 photos were

taken in Buffalo and were narrowed down to 3 that I felt best represented the access to transportation in this area and its potential impact on poverty. I analyzed and broke down each photo to further explain how this was relevant to the larger scale of poverty represented in the literature that inspired this project. What I found through these photos was that Buffalo, as a larger city usually does, has a fair amount of public transportation. Whether or not it is affordable, convenient, or even a viable option for many residents is really the question. With this research, I hope to raise awareness on the importance of public transportation and its impact on people living in poverty.

## Pinkham Notch Migmatite, New Hampshire: Evidence of High Melt Percentage Deformation

**Cody Crist**

Faculty Mentor: Professor Gary Solar, Earth Sciences

Rocks in Pinkham Notch, NH (Mt. Washington area, S of Gorham; Devonian, Central Maine belt) are part of a N-S-trending regional melted rock zone from central Maine through Massachusetts. Layered (stromatic) migmatite here are among the most impressive examples in the world, but most rocks in the area are not layered (diatexite; Wildcat granite). Outcrops in the Peabody River at the Great Gulf Wilderness trailhead have apparently layered and stromatic migmatite. Granite percent is higher than expected (25% or more) suggesting super-solidus conditions for a significant duration with low melt evacuation rate. Cm- and m-scale granite sheets are intrusive. Diatexite (schlieric granite) with separate, m-scale metasedimentary rock schollen are found in outcrop less than 100m to the SSW. Interestingly, the trailhead outcrops are less than 150m from the migmatite front (to the west), across which rocks are at amphibolite facies (staurolite zone), suggesting a steep thermal gradient or a fault at the migmatite front.

Examination from a distance suggests the trailhead outcrops are stromatic migmatite with classic tripartite components. Closer inspection, however, reveals more complex structure at the m- to cm-scale. The stromatic structure is not throughgoing, and the rock structure is instead defined by sub-aligned, schlieric-granite-bounded schollen of stromatic migmatite (raft-like blocks; NNE-SSW-trending).

We documented the trailhead rock structures, including schollen shapes and attitudes, internal structures, and migmatite component percent. Results show the NNE-SSW structural grain is defined by moderate schollen shape-preferred orientation, and not by the internal stromatic structures. Schollen fabrics are flattened and include augen, boudinage, and folds, none of which transect schollen boundaries. The schollen are discordant relative to each other suggesting non-cohesive deformation and passive block flow that was melt supported. We conclude these rocks are not stromatic migmatite but diatexite where the protolith stromatic structure is preserved inside the schollen only. These rocks differ relative to the regional diatexite in opposite proportionality of diatexite and schollen, and appear frozen in the transition from metatexite to diatexite.

## PharmBERT: A Pre-trained Language Model for Pharmaceutical Error Prediction

**Dustin Doctor**

Faculty Mentor: Professor Gang Hu, Computer Information Systems

Total number of retail prescriptions filled annually in the USA has reached 4.69 billion in 2021. However, the tracking over the service quality of the dispensation process is still very limited. In an effort to address factors that lead to quality-related events, some healthcare organizations and governments adopt error-reporting systems. Such reporting systems have collected pharmaceutical errors that either reach patients (incident events), such as incorrect drug, dose or quantity, or are intercepted at pharmacies (near miss

events). To discover common contributing factors that may have led to quality-related events, large-scale analysis of these event is crucial. Many common factors in retail pharmacies that resulted in an incident may not be obvious to the human eye and traditional data-mining solutions. With the progress of deep learning in natural language processing (NLP), the development of effective mining has been boosted, including the field of extracting valuable latent information from pharmaceutical documents. In this research, Bidirectional Encoder Representations from Transformers (BERT), is utilized to make predictions on the pharmaceutical transaction data (collected by a Canadian error-reported system). To fit pharmaceutical data with the BERT model, we formatted event information into Natural Language tokens, and fine-tuned on the pre-trained BERT model. The trained pharmBERT model is able to achieve an accuracy of ~84% when predicting whether an event would result in a near miss (caught beforehand), or an incident (caught afterwards). We are also working on using this model to further predict other aspects of the event, such as what stage of the events (prescribing, transcribing, dispensing, administration, storage, and monitoring) the incident occurs or what category of issues the event falls under. We believe that the findings from this study could lead to solutions to reduce pharmaceutical incidents and provide improvements in patient safety.

## The Effect of Stress on Food Reinforcement

Jonathan Doyle, Monson Jean, Adrianus Wutz, and Morgan Harrington

Faculty Mentor: Professor Naomi McKay, Psychology

The reinforcing value of food, or reward one receives from eating food, has shown to be related to BMI. It has previously been found that children who clicked faster for a food reward had higher BMI and adults who had a high reinforcing value of food also had higher BMI. What is unknown, however, is the effect stress has on reinforcing value. The hypothesis of the current study was that stress would increase reinforcing food reward in participants. The study began with participants relaxing for 20 minutes to establish a baseline stress level. Then, half went through a stressor, which was a mock job interview, while the other half were in a no-stress condition and played solitaire. After these activities, participants played a computer game on one of two available computers. The first computer rewarded participants in reading time, while the second computer rewarded participants with either grapes or M&Ms. For the game, participants earned greater food and reading rewards by clicking more. Participants were run in a between subjects' design. Throughout the study, saliva samples were collected to test for  $\alpha$ -amylase, blood pressure was measured, and self-rated anxiety was measured. It was found that participants who underwent the mock job interview had significantly higher anxiety and higher blood pressure readings, indicating that the stressor was indeed stressful. Participants in the stress condition clicked significantly less to earn either grapes or M&Ms compared to the participants who were in the non-stress condition. Although this contradicted the study's hypothesis, it showed that, in general, people may be less willing to work for food when experiencing stress.

## Mental Illness and Buffalo

Tanner Edmondson

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question will be how the surroundings of the City of Buffalo affects the impoverished's mental health and what can be changed to help. Mental illness is often viewed as a common problem among men and women however what study seems to neglect is the mentally ill among the impoverished. In the text "Poverty and Mental health" provided by The Mental health foundation, A well-known health organization found the link to most mental illnesses are linked to the social exposure of surroundings. Examples of social exposure are unemployment, poverty, and parenting. This photovoice will cover how the

mentally ill are affected by poverty at a more alarming rate than the common person in Buffalo as well as entail the importance of the aid of the mentally insufficient in Buffalo. Another goal of the photovoice is to show how the reader can identify the situation when varying from place of population and from person's age to gender to social status. This will all be shown and achieved with the help of my photovoice poster, visual aids that will be used in my poster will be provided by the City of Buffalo and while hopefully speak on the same urgency as all of America.

## Summer of Soul

Jordan Epps

Faculty Mentor: Professor Meg Knowles, Communication

I want to bring attention to the black culture that goes unnoticed. I want to compare the history of black people that we learn in school to history that is never discussed. I will mostly refer to the documentary "Summer of Soul" (Questlove, 2021). I plan on using other documentaries to show the accomplishments and successes of black people rather than the stories we all know about slavery, segregation, police brutality, unjust killings, etc. The paper (or podcast, not too sure yet) will explain the problems of only learning the negative sides of black history. I want my research to show that black culture goes beyond tragedy. Black history goes deeper than the surface of our struggle and misery, without taking away from them. I want to interview mostly black individuals who grew up during the time of The Harlem Cultural Festival (the setting of "Summer of Soul"). I also want to get the opinion of those who teach black history. This is important to me because I want black youth to know that it is possible to be successful and black. We are not our struggle and we don't have to remain oppressed. Knowledge is power.

## Housing: No Place to Be Poor

Jordan Gant

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

How is poverty in Buffalo, NY and how is housing being affected by it? We know that across the country poor people struggle to find affordable housing. About a third of Americas households are paying more than 30% of their incomes on housing, leaving them to make hard decisions about food, transportation, and healthcare. For my project I will display photos from Buffalo, NY to show the housing problem. Some of these photos will include locations where homeless people sleep (under bridges or shelters) and I have taken photo dog abandon houses. The poverty rate in Buffalo, Ny has stayed at the same percentage for about 15 years making it 28-29%. Buffalo is rated number 3 on a list of the nation's poorest cities. This city contains at least 35 different neighborhoods, and it is very diverse area. When the pandemic started people all over the city lost their jobs leaving people in desperate situations with the cost of living, food supply, health care, etc. The cost of living in a household should not be 30% more than the average person's income because there are other bills people must pay for. My poster will include ways to help the homeless in Buffalo and raise awareness that these people still matter by giving everyone the same opportunities, so they are able to better themselves.

## Quantitative PCR Analysis of mRNA for Photosynthetic Genes in *Zea mays* (corn)

Trinity Glover

Faculty Mentor: Professor Gregory Wadsworth, Biology

Quantitative PCR (qPCR) is a standard technique for quantifying specific nucleic acid molecules in mix samples or at extremely low concentrations. In this study, mRNA for the photosynthetic protein RUBISCO in leaves of corn seedlings grown under light or dark conditions (green leaves and etiolated leaves) was quantified by qPCR. Total cellular RNA was isolated from leaf tissue using silica-based chromatography. The yield of RNA was determined spectrophotometrically. Green leaf yielded 141 ng RNA/mg tissue and etiolated yielded 115ng RNA/mg tissue. The "intactness" of the RNA was analyzed by comparing the relative abundance of the major ribosomal RNA's, the 18S and 28S rRNA, using gel electrophoresis. Intact RNA is expected to have a ratio close to 2. Analysis of the green leaf and etiolated leaf rRNA generated a ratio of 1.69 and 1.39, respectively, suggesting some degradation of the samples. Lastly, a qPCR amplification was conducted on the two samples. First, Reverse Transcriptase was used to copy the Rubisco mRNA into a cDNA template. Then a standard PCR reaction was used to amplify RUBISCO mRNA using specific PCR primers and Taq polymerase. SYBR Green fluorescence was used to monitor the amplification of the DNA. The PCR reactions amplified a product in both the green and etiolated leaf RNA samples. Gel electrophoresis of the final PCR products indicated some of the product was the expected product of the cDNA/mRNA, but some of the product was due to genomic DNA contamination in the samples. There was also substantial variation between technical replicates, complicating efforts to determine the relative amounts of RUBISCO mRNA in the two leaf types. Methods for controlling experimental variation and limiting DNA contamination in RNA samples will be discussed.

## Community School Characteristics of Lafayette International Community High School

**Karly Glowny**

Faculty Mentor: Professor Corinne Kindzierski, Elementary Education, Literacy, & Educational Leadership

The focus of the research was to take a deeper look at a PDS (Professional Development Schools) partner school of Buffalo State College-Lafayette International Community High School and the outreach programs the school offers to its students and families within the West Side community of Buffalo. Many people who reside in the West Side of Buffalo are immigrants. Over 12,300 refugees and immigrants who settled in Buffalo-Niagara in the past five years live in or near poverty (Numbers in Need in Buffalo Niagara, 2017). The goal of community schools is to implement strong educational programs which reduce learning gaps, enrich and expand curriculum, and strengthen parents and community engagement in school (Hunter Quartz, Daniel, Maier, 2020). Lafayette ICHS is a community school located in Buffalo. Community schools within the BPS (Buffalo Public Schools) district have a high population of students who are multilingual, many of whom are from Puerto Rico, Burma, and Somalia (2018). The methods used in the research project included a case study, literature review, and an informal interview with an ENL (English New Language) teacher who works for Lafayette ICHS. The data was collected by interviewing the teacher about the community aspects of the school. Her responses were recorded by the researcher. The final paper provides literature, data findings, and implications that uncover the community programs offered at Lafayette ICHS as well as a description and characteristics of community schools.

## NFL: National Football League or Narcotics Felonies and Legal issues

**Evan Harrington, Jacob Molnar, and Mike Glinski**

Faculty Mentor: Professor Jane Sullivan, College Writing Program

The National Football League (NFL) is the most profitable sports league in America, so why is there so much crime involved with NFL players themselves? Players often commit crimes because the professional environment is fraught with stereotypes of addiction, gambling and domestic violence. Drugs are prohibited

in the NFL, yet players still use them. Drugs and what players do when they are under the influence can cause illegal behavior and poor decisions. Does Chronic Traumatic Encephalopathy (CTE) and mental health play a role in NFL players committing crimes? Are players self-medicating for CTE, leading to their drug use? Early CTE symptoms include impulsivity, explosivity and aggression. So CTE may play a factor in NFL players committing crimes. Mental health is also a big contributor. We preach how important mental health is today because it impacts NFL players. Does geographical location also play a factor? In the 2021 season alone, the Las Vegas Raiders were known for being the most criminalized NFL team. With prior IRB approval, we will collect data from D3 college football students at a four-year urban public institution and D1 college football students at a four-year urban public institution. The specific focus of the data collection will be (a) perception of NFL player behavior, (b) student perception of CTE's impact on NFL players, (c) if a team's geographic location impacts the incidents of negative player behavior and will compare and contrast response from the two divisions.

## Stabilization of the Grid: Integrating Geothermal Heat Pumps, Battery, and Synchrophasors

Sean Hayden, Thomas Hinshaw, David Mraz, and Vincent Giardiello

Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

This project examines the viability and benefits of pairing geothermal heat pumps with battery storage for eleven residential homes and a large commercial building. The surrounding utility's infrastructure makes this project suitable for showcasing decrease in demand placed on the aging electrical apparatus during peak periods. Geothermal heat pumps are more efficient than the current traditional heating and cooling methods in place. As the batteries are paired with the heat pumps, synchrophasor technology is used with four-quadrant metering to ensure local grid stability while residents are provided ample heating and cooling during periods of high demand, power outages, and emergencies. These concepts have been applied in a simulation using authentic data in a real-time digital simulator (RTDS) using RSCAD F/X software. This demonstrates how the grid can be improved by decreasing demand and increasing reliability while measuring voltage, current and phase angle displacement at a rate of 60 samples per second. This project demonstrates the economic and electrical benefits of using the latest in technology by integrating geothermal heat pumps and battery storage for instantaneous backup, demand response, peak shaving, and energy load balancing providing a powerful use case. The project is part of senior design course sequence performed during fall 2021 and spring 2022 semesters at SUNY Buffalo State.

## Stereotypes, Substance Abuse, and Social Exclusion

Spencer Jones

Faculty Mentor: Professor Kimberly Kamper-DeMarco, Psychology

Stereotyping is a common experience among racial minorities that tends to be exacerbated in college-aged emerging adults. Stereotyping is a form of racial or ethnic discrimination that can also lead to maladaptive coping mechanisms such as substance abuse. Peer victimization among racial and ethnic minorities has also been shown to have an effect on academic performance. Given the stress that stereotype-based victimization can cause, we hypothesize that individuals who experience high rates of stereotype-based victimization will be more likely use substances as a coping mechanism. This relationship may be moderated by high levels of social exclusion. Research in this area has focused primarily on adolescents. This study will extend previous research in this field to a college student population. Undergraduate students were recruited at a diverse, urban college. In order to assess stereotype-based experiences and social exclusion, the Peer Victimization in College Scale was used. Questions based on

SAMHSA wording regarding drug use were included to better understand college levels of substance use. These assessments are being collected at multiple time points to gain a longitudinal understanding of the data; however, for the current study, only wave 1 will be studied. Data collection and analyses are ongoing.

## Characterization of Quick Freezing-Induced Silver Nanoparticle Aggregates (QFISAs) Using Spectroscopic Methods

**Brendan Larsen**

Faculty Mentor: Professor Jinseok Heo, Chemistry

Here we report the characteristics of citrate-capped silver nanoparticle (AgNP) aggregates prepared using quick freezing. A solution containing citrate-capped AgNPs with an average diameter of 70 nm was frozen in liquid nitrogen and thawed at room temperature. The quick-freezing method produced AgNP aggregates termed as QFISAs. The QFISAs were stable for more than a month if stored in a refrigerator. Our previous study showed that freezing-induced Au nanoparticle aggregates (QFIAs) could be used as surface-enhanced Raman scattering (SERS) substrates in the near-IR (NIR) region. The spectroscopic properties of QFISA were examined using UV-Vis spectroscopy and Raman spectroscopy. Compared to unfrozen AgNPs, the QFISAs showed a shift in the plasmon absorption wavelength from 445 nm to 443 nm and an increase in the absorption in the near-IR (NIR) region. The blue shift of the plasmon absorption suggests a decrease in the size of AgNPs, and the appearance of an extended plasmon band in the NIR region indicates the presence of the freezing-induced AgNP aggregates. The Raman study revealed that the SERS activity of QFISAs is more dominant with a 532 nm laser excitation than with a 780 nm laser excitation, suggesting that the QFISA is a better SERS platform in the visible region than in the NIR region unlike QFIAs. Nile Blue A dyes could be detected at the nanomolar concentration level using QFISAs as SERS substrate. This study shows that QFISAs can be potentially a good platform for the detection of analytes using the SERS in the visible region.

## Identifying Patterns in Small and Larger-Scale Changes in Water Levels in the Buffalo River

**Eric Lipps**

Faculty Mentor: Professor Jill Singer, Earth Sciences

The Buffalo River is classified as a Great Lakes Area of Concern due to loss of habitat, poor water quality, and contaminated bottom sediments. Due to the orientation of Lake Erie in the same direction as the prevailing WSW winds, persistent winds push water from the western (Toledo) end of the lake and pile water up at the eastern (Buffalo) end of the lake causing large setups (elevation changes) which in turn create surges into the Buffalo River. To understand Lake Erie wind-driven surges, including how they propagate into the Buffalo River, water level recorders were deployed at three primary sites in the Buffalo River (mouth, mid-river, and up-river) between May and early November for the period 2011-2018. Excel was used to plot time versus elevation for these data. This project builds upon previous undergraduate research projects by: 1) including data collected between 2016 and 2018; 2) examining the water level data at a finer scale to show much greater detail; and 3) comparing selected date ranges of interest in the Buffalo River to water level data for Lake Erie available on the NOAA website. This study also included water elevation data collected from two additional sites in the Buffalo River (sites located between the river mouth and mid-river) and from two sites located outside the river (Round House and Outer Harbor). Preliminary findings based on observations using the Excel plots include: 1) There is agreement in the scale and timing of water elevation changes for all five Buffalo River locations and the two sites located outside the river; 2) The three primary Buffalo River sites, Outer Harbor site, and Round House site are in agreement



with NOAA data from two sites (Buffalo and Sturgeon Point); and 3) The responses to water level changes in the Buffalo River appear to be about half as large as the elevation changes occurring in Lake Erie. This presentation will show example plots from the Buffalo River and Lake Erie supporting these observations.

## The Height of Fame for Athletes Can Bring the Lowest Moment

Dimitri Millis

Faculty Mentor: Professor Meg Knowles, Communication

My research will call attention to the effects of fame on superstar pro athletes, who come into their professional sport young, beloved, accepted, and extremely talented but then become the center conflict and controversy in the eyes of both the media and the sports world regarding lifestyle, personality, behavior, and style of play. I will discuss two cases seen in recent documentary films: Iverson, directed by Zateella Beatty (2014) and Neymar the Perfect Chaos by David Charles Rodriguez (2022). The films follow Allen Iverson, a former professional NBA basketball player and Neymar, a professional soccer player. Both athletes come into the league at a young age possessing phenomenal talent, take their sport 's world by storm and are recognized at a national level. Although both young men are rare talents, who would live and die for their sport and love to play, they must learn to deal with the media and league controversies based on several factors. This research will closely look at the harmful effects of fame on young athletes, and how the media attempt to derail their careers while they are producing at a high level. It will consider how the defamation law works or fails to work to protect athletes from media attacks. Athlete publicity has been a rising issue in athlete branding and sport management literature. Studies have concluded that positive publicity tends to generate positive outcomes, whereas negative publicity produces negative outcomes. The longer an individual is subjected to negative publicity, the more often the public will associate the celebrity with a negative image.

## Poverty and Hygiene in Buffalo

Mamadou Misibahu

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The problem I am trying to address answers the question; what do poverty and hygiene look like in Buffalo? I incorporated data from class notes and the book "Broke in America" to generate the information used in this research project. The authors of "Broke in America" document how hygiene is related to the low-income minority. I use this information to simplify and summarize the connection between poverty and hygiene. I walked around Buffalo to observe, and I took pictures to be used in the presentation. Two of the images will be used as a comparative basis to differentiate the situation in Buffalo. The pictures show dumping sites in Buffalo and will be used to show the hygiene problems we are facing in Buffalo. The other photos show street hygiene and water pollution in some parts of Buffalo. I concluded that proper hygiene in Buffalo is still a work in progress because of poverty, and not every individual cleans after themselves. The dumpsites are located there because the locals raise low taxes from low income, and Buffalo does not have enough money to cover the cost of a clean environment. I would recommend that new public policies be introduced in Buffalo to provide for issues like a clean and decent environment. To combat poverty, Buffalo residents should be hired to work as cleaners, we should raise awareness and donate to events to raise money to help clean our city. If there are more people in employment, more taxes are paid and cleaning services can be afforded to improve hygiene.

## Comparison of Commuters' versus Residences' College Experience

Emily Newell and Andrea Newell

Faculty Mentor: Professor Howard Reid, Psychology

This study is designed to examine the relationships between choice of residence and academic performance, social life, and personality of students at Buffalo State College. Students will complete a Qualtrics questionnaire. We predict students who commute will show both enhanced academic performance and time management skills. We believe this is due to commuters having fewer dorm-related distractions and the need to manage their time better due to being more involved in off-campus activities/working more hours. Overall, we predict there will be an even distribution of extracurricular activities among both commuters and dormers, with commuters more focused on off-campus activities. Due to their on-campus focus, we predict that students who live on campus will make more new friends than those that commute. The project has been submitted to the IRB and it is anticipated that the data collection will begin soon.

## Metal on N-Doped Carbon Catalysts for Aerobic oxidation of 5-Hydroxymethylfurfural

Liam O'Connor

Faculty Mentor: Professor Sourav Biswas, Chemistry

Heterogeneous aerobic oxidation reactions are important for synthesizing value-added chemicals from petroleum and biomass-based materials. Herein we employed electrocatalysts consist of metal on the N doped carbon (M-N/C), which were found to be active in reducing oxygen in fuel cells for the aerobic oxidation of 5-hydroxymethylfurfural (HMF) to 2,5-diformylfuran (DFF) in an organic solvent. We found that the Co based catalyst performed the best among the studied metals, whereas polyaniline was the most active nitrogen source. kinetic analysis revealed a first order rate dependence on [HMF], whereas absence of any active metal sources in the filtrate after hot filtration test and 4-step reusability of the catalyst conformed the heterogeneous nature. This study ventures for direct implementation of fuel cell based electrocatalysts for oxidation catalysis in practical organic reaction conditions.

## Chemical Analysis of THC and CBD in Hemp-infused Beverages and Mixers via Gas Chromatography

Colby Riexinger

Faculty Mentor: Professor Jamie Kim, Chemistry

Although many states, including New York, decriminalized the possession and personal use of marijuana, tetrahydrocannabinol (THC) is still listed as a Schedule I drug according to the Drug Enforcement Administration (DEA). Therefore, commercial cannabis products such as hemp oils and beverages can't contain THC higher than 0.3%. In this project, we monitored the concentration of two psychoactive components, THC and cannabidiol (CBD), present in five hemp-based beverages by the use of gas chromatography (GC) and standard materials. Our GC data showed that various amounts of CBD were detected in these samples, but THC was not found in any of the samples. In addition, the amounts of CBD in the products were different from those claimed by manufacturers.

## What Does Poverty and Housing Look Like in Buffalo?

Grace Sforza

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research project question is “What does poverty and housing look like in Buffalo?”. Homelessness is a huge problem in the US today, and the government does virtually nothing to help it. The government spends so little on programs to help make housing available for low-income people. It is inevitable that this imbalance will cause more homelessness, as well as people settling for poverty-quality homes, going without food and other essentials, and living in situations where they are victimized. The format that I will be using to answer my research question is Photovoice. Photovoice is a good way to provide a voice to the people who need it and to spread awareness about the issues they are facing. This allows people in the community to become more involved in what goes on in their community. The photos relate a lot to what the literature is talking about. Homelessness is a huge problem in Buffalo. There are not enough shelters for people in need. Looking at research done for homelessness and housing crisis statistics in Buffalo and surrounding areas between 2010-2017 it showed that almost 50% of people are homeless. This project is going to show the struggle that people have when it comes to finding housing. My hope for this project is that it will hopefully raise awareness to the struggle people face when it comes to finding a home, and that it will make people want to become more involved in finding a way to help the community.

## Relation Between Stress, Impulsivity, and Online Academic Performance During the Initial Quarantine for Covid-19

**Brendan Silva**

Faculty Mentor: Professor Michael MacLean, Psychology

With the pressures of online learning caused by the global pandemic, stress through college reached a unique high with the pressures of teaching oneself thoroughly while isolating from the deadly virus. Prominent stressors to keep in mind are the socially isolating scenarios and the worry about their loved ones and their own health, pre-vaccine. This study looked at the effect that these unique stress levels had on distress impulsivity and online academic performance. Distress impulsivity is defined as the tendency to act without considering long-term consequences when in a distressed emotional state. While it is known that stress can lead to impulsive behavior, it is not known whether this mediates the relationship between stress and academic performance, particularly regarding online academic performance. Data were collected from 55 college students (18-27 y.o., 77% female; 42.6% Black, 27.9% White, 11.5% Hispanic, 9.8% Asian, 8.2% Mixed) participating in a longitudinal study. Only Time 1 data were included in the present study. Our results showed a significant positive correlation between perceived stress and distress impulsivity ( $r=.39$ ) indicating that the more stressed one is, the more likely the individual is to act without much forethought. A significant negative correlation between stress and online academic performance was found ( $r=-0.33$ ). However, the negative correlation found between distress impulsivity and online academic performance ( $r=-0.12$ ,  $p>.05$ ) was not significant, indicating the relationship between perceived stress and online academic performance is not mediated by distress impulsivity. The findings indicate that stress has a meaningful detrimental effect on college students' academic performance, which may have been heightened during the covid pandemic, but individual differences in impulsivity when distressed do not seem to be involved.

## The Importance of Play in College Students

**Chelsea Simmeth**

Faculty Mentor: Professor Julie Henry, Elementary Education, Literacy, & Educational Leadership

This research examined the role of play in Higher Education and how college educators use play in their curriculum to increase student's creativity and learning (Forman, 2018). The poster presentation will provide literature that uncovers the benefits of play in college curriculum and practical ways to incorporate

it into a college classroom. Play is thought of as “childish,” but this research is to show that play should be used in adulthood as well. Play plays an important role in how someone learns and their experience with learning. Play in the teacher education program can model these benefits for teachers to use in their own future classrooms. This project focuses on play in the college environment and how college educators use play in their curriculum to increase student’s creativity and learning. Play has an important role in how one learns and how they experience learning. Teachers and teacher candidates can model these activities and styles to see the benefits in their own classroom.

## How Music Activities Enhance Literacy Development

**Brianna Smith**

Faculty Mentor: Professor Kathleen Gramza, Elementary Education, Literacy, & Educational Leadership

This research project is significant to the field of education because many researchers have found connections between music and literacy development. Music contains elements that are beneficial to beginning and emergent readers such as rhyme and rhythm and allows for children to connect it to their lives. Music is described as a language of learning that evolves into children being able to think and communicate, and more significantly, being able to read and write. Because it provides enriching experiences that children can relate to their lives, children will be able to express their experiences while simultaneously promoting language experiences. In my research, I was able to see how teachers implement music into their literacy instruction. I examined resources that are available to teachers, and how effective they are in literacy development, specifically phonological and phonemic awareness. I viewed data on how music affects literacy instruction for students who are English Language Learners, as well as analyzed ways in which teacher candidates can successfully implement music in their literacy instruction. Through conducting interviews of teachers with backgrounds in both music and literacy, I was able to compile a list of resources that teachers and teacher candidates can utilize in their instruction.

## Diverse Housing

**Hsakprue Soe**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is what does poverty and housing look like in Buffalo. Throughout the United States housing crisis is not something new. It had always been in issue homelessness is very common and can be seen throughout almost every major city in America. For most people it’s between either eating or paying rent, people don’t make enough to find a place, wages have only gotten up 10% between 1973 to 2017 and yet rent and house prices are sky rocketing. To obtain my information I used the research method of photovoice, which is participatory research, advocacy, and a call-to-action examples of these are providing individuals who live in poverty or dealing with social issues cameras where they can document their day-to-day life on a real-life experience. In my research I took pictures of how housing is a problem in Buffalo. My pictures show the diversity in how housing looks in Buffalo where on one block it has big, beautiful houses then you go a couple blocks over and you see houses where it’s beat up and not well-maintained. Over 30% of people in Buffalo us living in poverty and those are the ones only the census was able to document. In Buffalo and throughout the United States housing is a common struggle that should be better addressed. Through my research and photovoice I hope to bring attention and awareness of how housing is an issue within our country and local community.

## Permanence

**Jack Thomas**

Faculty Mentor: Professor Ali Eagen, Fashion and Textile Technology

The objective of this fashion design project is to discover and experiment with architectural methods in order to fulfill the goal of devising a new formulation for slow fashion. As well as solving the problem of extraneous waste fabric by re-incorporating it onto the garment for strength and longevity. I am integrating golden proportions and Le Corbusier's regulating lines as well as architectural gusset plating in my collection. The techniques employed for measuring the size, shape, and cohesive structure of form in garments, so that it is pleasing to the eye, will serve as an abstract aspect to convey enduring silhouettes as architecture relates to permanence. The Parthenon in Athens is a main touchstone reference for this collection as it is known in the architect's world as a manifestation of architectural perfection, which is a testament to the idea that architecture is the most permanent art form. The gusset plating is used to change the material reality of garments to lengthen their resistance against external abrading factors on the posterior chain of the human body. This will take place when leftover materials are sewn into the backs of the garments to add a protective layer to preserve a longer lifespan. This is the material vector of fulfilling this objective which relates to "permanence" as they are likely to last forever because of this implementation of plating. The significance of this endeavor has been to assimilate architectural proficiencies to form an abstract aesthetic which represents its objective. Along with formulating a nuanced design for fashion that can prolong the longevity of garments in order to act as a countermeasure and precedent against fast fashion which corrupts the industry and harms the environment.

## Buffalo Music Memorabilia Database

Nguyet Que Tran

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

Data is an important asset of every company or organization. Providing a database management system so that users can access, update or edit data is one of the fundamental goals of an organization. This project is part of a database system of the nonprofit organization called Buffalo Music Hall of Flame (BMHOF) which was established in 1983 as a part of the Buffalo Music Awards. The mission of BMHOF is to honor, preserve, and protect the diverse musical culture and heritage of Western New York through education, scholarship, and performance. The organization also recognizes, via formal induction, those individuals and groups who have made a significant impact on the music scene. Their data is divided into three main groups: Inductee Database, Nomination Database, and Memorabilia Database. The purpose is to build a database system that links all of these three main databases together, increasing interactivity to support users in using, processing, and updating data in a user-friendly environment with easy-to-use features. The current research project will focus on the Memorabilia Database which contains information about all authentic and classic musical items such as instruments, recordings, photos, posters as well as items of clothing. Oracle Apec and SQL are used for back-end data processing; the project will also create a front-end application so that the users can interact with data with optimized timing.

## The Relationship Between Socioeconomic Status and Food Reinforcement

Aimy Vadeboncoeur

Faculty Mentor: Professor Naomi McKay, Psychology

Socioeconomic status (SES) has a significant impact on several spheres of life. Previous studies have found that higher SES in an adult population was related to a healthier dietary pattern. Thus, SES would be an important factor for the development of healthy eating habits. Also, among women, high childhood SES would be a predictor of healthy food intake in adulthood. The present study aimed to better understand the impact of SES on anxiety and food intake. It was hypothesized that people with a lower SES will be more

motivated to obtain unhealthy food than people with a higher SES. The participants were composed of a heterogeneous sample of 71 adults aged between 18 and 50 ( $M = 21.20$ ,  $SD = 5.85$ ) of whom 22.54% were male. Participants came into the lab and were split into two groups, stress, or no stress. For the stress condition, participants underwent a mock job interview and in the no stress condition, they sat quietly. After the stress or no stress, participants played a computer game where they worked for portions of either a healthy or unhealthy food item or reading. The more times they clicked the mouse button, the more portions they received. The hypothesis was partially confirmed. There was a significant negative correlation between SES and clicks for either healthy or unhealthy food intake ( $r(64) = -0.31$ ,  $p < 0.05$ ). We also found a significant negative correlation between SES and clicks for reading ( $r(66) = -0.34$ ,  $p = 0.01$ ). Finally, a significant positive correlation was found between SES and the second systolic blood pressure measure ( $r(66) = 0.24$ ,  $p = 0.05$ ). The present study showed that people of lower SES tend to work more for either food or reading.

## Rerooting Innovation

Jessibel Velazquez

Faculty Mentor: Professor Ali Eagen, Professor Fashion and Textile Technology

My S/S 23 collection interprets the theme “Push for Progress” by demonstrating a need for change in over-consumption and overproduction in the fashion industry. We currently live in a world that is constantly driven to change. Coupled with fashion brands that reinforce the more-is-more mindset, many people may find the need for new items that aren't entirely necessary. This results in many products being poorly made, furthermore, losing their purpose and functionality for the long term, being converted into waste as quickly as they were produced and launched. This excessiveness has been causing huge sustainability issues for quite some time. Many may place the blame solely on fast fashion brands because they are producing products quicker and of poor quality. However, this is a problem that also includes luxury brands that may get rid of quality clothing in an unsustainable manner to avoid losing their brand image with price reductions or sales. The climate change crisis is only accelerating and we can observe this with recent extreme weather events such as rapid melting glaciers like West Antarctica's Pine Island glacier that has only been speeding up since 2017 according to NASA. Natural disasters such as hurricane Delta and Laura that devastated Louisiana in 2020 and tsunamis such as Selta Sunda that devastated India in 2018 to name a just few. These extreme weather events are becoming harder to ignore and calls for a more drastic effort before it's too late. It's more important now than ever for companies, young designers and individuals to act together. My collection focuses on convertibility and innovation with intentional design. This will be demonstrated through combining fashionable convertible pieces with soothing and sustainable colors, fabrics and silhouettes. Layering core items that show naturalistic elements that promote nostalgia of a healthy planet that was, and will hopefully become, with highly functional and well-made mix-and-match pieces that will truly grow with the wearer. This concept connects to the WGSN theme "push for progress" for S/S 23.

## The Psychological Effects of COVID-19 on College Students

Faith Westgate, Adrianus Wutz

Faculty Mentor: Professor Howard Reid, Psychology

The unprecedented nature of the COVID-19 pandemic has dramatically increased the challenges faced by college students. In order to ascertain the effects upon their mental health, this study investigated potential associations between anxiety, depression, and schizotypy in college students as well as how individuals' concerns about COVID-19 may have impacted these mental health issues. In addition, this study

examined whether individuals' exercise habits affected their COVID-19 concerns. Participants were undergraduate students recruited online from Buffalo State College during the Fall 2021 Semester. In total there were 123 students, consisting of 18 males and 105 females. Participants were instructed to complete a questionnaire in which extra credit opportunities were offered. Following consent, participants answered demographic questions and then questions regarding their level of anxiety, depression, and schizotypal behavior, as well as their worries related to COVID-19. Additional questions on other topics were also included. Strong correlations between anxiety and schizotypal behavior, depression and schizotypy, as well as anxiety and depression were found. Additionally, there was a positive correlation between worries about COVID-19 and schizotypy as well as symptoms of anxiety.

## Food: A Need Well Deserved

**Claudia Williams**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is, what does poverty and hunger look like in Buffalo, NY? Poverty is much more than not having enough money for basic needs such as food, clothing, and shelter. Poverty is hunger, lack of shelter, lack of access to health and education, lack of freedom and the list continues. As of right now, 30.1% of the population for whom poverty status is determined in Buffalo, NY. Seeing it in a different aspect, 74.6k out of 248k people live below the poverty line. 12% of Erie County is food insecure. There are approximately 100,000 people in Erie County who live off SNAP benefits. Food hunger is a big issue nationwide, but even thinking or seeing the food hunger rate is absurd and inspired me to obtain knowledge in seeking to bring about change in communities. I will be doing that by using photo voice. The photos that I chose emphasizes things that we can do as a community to help. Things such as provide food pantries in areas in which have high poverty rates and donate to nonprofit organizations or any other foundations that are in full support of feeding people of hunger.

## Housing For Everyone

**Rachel Marillo**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research project will be about if people living in poverty in the Buffalo area struggle to get affordable housing and to buy their own homes. We live in a very diverse world, especially our country, America. In America, it is more challenging for Hispanics and African Americans to be able to afford housing because their mortgage rates are much higher. I used photovoice to explore if this is also the reality in Buffalo, NY. While using photovoice, I found that many people in Buffalo who aren't able to afford housing use unsafe conditions such as, sleeping under tunnels, and also going to cheap motels that aren't taken care of properly. Some of these people also rent out abused apartments that aren't being taken care of by their landlord, and the landlord expects tenants to take care of the building. In my poster, I would like to raise awareness of these issues because every person deserves the right to have a safe place to sleep. I don't think having somewhere safe to sleep should be a privilege, it should be a right. My goal is to advocate for the people who are struggling in poverty and find a safe place to live. I want to encourage others to learn more about this issue with housing and to also get more involved in helping the issue.

## A Starving World: What Happened to The Basic Needs of Human Life?

**Amie Wally**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is, what does poverty and food hunger in America look like in Buffalo? There is food hunger in America, issues of young children failure to thrive (FTT), and iron deficiency anemia (IDA). Programs attempt to address this issue, including the supplemental assistance program (SNAP), SNAP for women, infants, and children (WIC), and thrift plan (TFP). I utilized photovoice to collect statistics about food hunger in Buffalo. Photovoice is a research methodology that promotes the use of photography for positive social change. I took varieties of pictures in Buffalo that emphasized what poverty relating to food hunger looks like. Furthermore, I completed an image analysis to help my audience understand my viewpoint in these pictures. I used three images on my poster that draw a connection between what is happening locally in Buffalo to what's happening nationally in the US. As illustrated in the photos and the local statistics, food hunger is a major issue in Buffalo. My preliminary findings are that more than 100,000 children under-five in the US are underweight. Nearly 3 in 10 residents and 4 in 10 children live in poverty in Buffalo. Buffalo needs a lot of improvement and assistance regarding poverty and food hunger to its residents. I have included community resources; support groups and ways individuals can get involved to assist advancing change in this topic.

## The Language of Melodies

Cyler Witherspoon, Isabella Sciortino

Faculty Mentor: Professor Jane Sullivan, College Writing Program

No matter what language you speak or how many you know, everyone can understand a melody. Learning notes and songs are the same for everyone. Musical notes are configured in unique arrangements, using harmony, dissonance, time signatures and rhythms, communicating in a language without the use of lyrics. Music is used for enjoyment, celebration, ceremonial rituals, and expression of emotions. Sources suggest that analyzing a song's features makes it possible for a person to understand a melody's meaning regardless of the person's culture and language. Is the way everyone learns to create music the same? And is music actually a universal language? Music goes beyond the conscience to the unconscious level of the soul. While it will be interpreted differently by anyone who listens, the internal feeling will be similar for each person. For example, anyone listening to a movie score can hear what the music is saying, even when lyrics are not used. With prior IRB approval, using a sample of convenience of first year college students in a four year urban public college in upstate New York, participants will be surveyed to listen to four pieces of instrumental music. The participants will be asked (a) if they recognize the piece and where it is from, (b) to describe their emotional response, and (c) to write a sentence summarizing what the music is saying.

## Rubber Sidewall Alignment Design for Motorcycle Tires

Scott Zeitz, Shihabeldin Abdelhamid, Okyere Akuoko

Faculty Mentor: Professor Jikai Du, Engineering Technology

We are working with Sumitomo Tire to design a better way to apply sidewalls to their different sized motorcycle tires. The machine we will work on currently has four plates with two plates on each side that align the rubber strip to the tires. In the middle of the two plates there is a center flap that holds the rubber strip down to straighten it out. In the front of the machine there are three lasers that indicate the center of the tire and the inside of where the sidewalls will be applied on each side. Currently the operator of the machine has to put his hands in the machine and adjust each plate and the center flap individually which is dangerous and inefficient. Our design will have a dial labeled with each tire size so that as the operator turns the dial, each of the plates will move and adjust to a specific size. Our design will have threads in each plate where two of the plates will have reversed threads since each side will have to move in different directions to adjust for the tire sizes. The center flap will be connected to the two plates on each side so



that everything will move at the same time. This way we can have a threaded rod in the middle that gets turned with the dial and both sides will move in towards each other for smaller tires or away from each other for bigger tires. This design will be safer since the dial will be off to the side instead of having someone reach into the machine. The design will also be more efficient since everything will move together with one turn of a dial instead of adjusting each part at a time.

## Jazz Impact: Duke Ellington's Black and Tan Fantasy

**Jodie Amato**

Faculty Mentor: Professor Carolyn Guzski, Music

Duke Ellington's (1899-1974) *Black and Tan Fantasy* was one of his most influential pieces. He composed this piece in 1929 at the beginning of his success. The virtuoso pianist had just gained residency at the Cotton Club, Harlem's iconic Jazz Age night spot. Duke Ellington's residency at the Cotton Club had a huge influence on *Black and Tan Fantasy*. The Cotton Club's jungle theme contributed to Ellington's formulation of an exuberant musical style known as "Jungle Jazz". The resident ensemble's performances were extremely theatrical at this time, including dancers and singers that presented a narrative floor show to illustrate the music. During the 1920s, Ellington developed his composition style with powerful themes and colorful orchestral frames—raucous or piercing brass mutes, strident reed mixtures; unveiling an entirely new tonal palette. The tone and color of the piece erupts is often described as guttural. Bubber Miley, played trumpet with a plunger mute in a raspy manner, and Tricky Sam Nanton was the trombonist on this piece, his playing invoked the sound of the human voice. These two musicians impacted the tone and color in the Duke Ellington's musical style. My project explains how *Black and Tan Fantasy* impacted Ellington's future composition, "Black Brown and Beige," a distinctive example of the classic American genre known as symphonic jazz. I will analyze what musical compositions Ellington borrowed from, and how Ellington greatly impacted classical and American popular music.

## Events that Created a Masterpiece

**Andie Baco**

Faculty Mentor: Professor Carolyn Guzski, Music

*Frauleben und Leben* was written by a German composer named Robert Schumann (1810-1856) after the personal events trying to earn the right to marry the woman of his dreams. Robert Schumann before becoming a full-time musician, he went to school for Ecclesiastical and international law. Schumann decided to opt out of law and began to take lessons with a well-known man named Friedrich Wieck. While taking lessons Schumann went to many musical activities which led him to be inspired by early contemporary virtuosos. Later, Schumann had met woman named Clara Wieck. Clara was Schumann's private lesson teacher's daughter. Their relationship grew and became more than a friendship and Schumann knew that he wanted to marry her. When discussing his idea of marrying Clara, Friedrich denied Schumann of marrying his daughter. Schumann had then consulted an attorney and began the process of a legal battle. After the battle between Schumann and Wieck, the court granted permission for Schumann to marry Clara. Schumann took these events in his life and turned them into the song cycle known as *Frauleben und Leben*. Although the songs were where written about his life events, Schumann wrote all eight songs in the women's perspective and the woman who is portrayed in this song cycle is none other than his wife Clara Schumann. The songs that I will be focusing on are 'Seit ich ihn gesehen' ("Since I saw him) and 'Du Ring an meinem Finger' ("You ring upon my finger"). The whole song cycle focuses a woman's journey of falling in love to getting married. Between the melodic and harmonic contrast that each song has, Schumann with the use of specific poetic text to express the events that are happening. I hope to share the same

enthusiasm I have about the composer Robert Schumann and his love for his wife Clara Schumann in my project.

## Comparison of Granites in the Sebago Area, Southern Maine

Lindsay Piotrowski and Alexandra Ballow

Faculty Mentor: Professor Gary Solar, Earth Sciences

Strategic collection of granitic rock specimens was used to test previous mapping and analyses from the Sebago pluton NE contact zone with surrounding migmatite-granite complex country rocks. The contact zone is the center of our study area (near Gray, ME) where the coarse-grained granite is interleaved with migmatite country rocks. To the west is the Sebago pluton defined by homogeneous, medium-to coarse-grained 2-mica granite. In contrast to the Sebago pluton, to the east rocks are strongly heterogeneous in a complex of plastically deformed migmatites and granites with varied compositions and textures in the migmatite-granite complex, MGC, of S. Maine, and interpreted to be country rock to the pluton emplacement. Granites of the contact zone are relatively similar to the pluton rocks with discrete finer grained granite dikes. We selected representative granite specimens along a W-E transect, 1 from each map unit and across the pluton contact. The specimen from the Sebago pluton is from a 300-meter-long roadcut of homogeneous coarse-grained 2-mica granite. The specimen from the contact zone is from a 3-meter-wide dike of medium-grained 2-mica granite that crosscuts the main layers that define the contact zone. The granite from the MGC is from a boudinaged granite layer in migmatite. We collected mineral composition and grain size data for comparison. Thin sections were cut according to any fabrics. We documented any preferred orientations of minerals and grain-shape fabrics. All specimens are similar in composition but contrast in texture owing to map unit sample location. The Sebago pluton specimen is coarse grained with mosaic equigranular to seriate texture. Undulose extinction in quartz is the only strain microstructure. The contact zone specimen is relatively strain free, similar in texture (finer grained) to the Sebago specimen. In contrast, the MGC specimen is granitic gneiss with significant plastic strain recorded including undulose extinction in both quartz and feldspar, both with serrated grain boundaries, and a strong mica foliation. Consistent with previous work, clearly the Sebago pluton is distinct from the MGC country rocks, yet the contact zone granitic rocks more closely resemble the pluton.

## A Look at Hygiene in Buffalo

Leah Blatner

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

How important is hygiene in Buffalo, New York? Often, we can see what a society values when looking at the policies that they have set. Although it seems like a basic right, hygiene and poverty is often neglected in legislation. It is common practice for impoverished parents to miss work to take care of their children because they cannot afford diapers that many daycares require. There is no equivalent to food stamps for hygiene products. In addition, there are people who menstruate that often have to miss school or work because they cannot afford period products and the taxes that come with them. For this reason, this presentation will focus on what hygiene looks like in the city of Buffalo through PhotoVoice, a research method that is centered on taking pictures of the problems within our society. Based on a preliminary investigation of this, there is a fundamental problem in Buffalo that is trying to be fixed through nonprofit organizations. My poster will discuss whether or not these organizations are beneficial to people struggling with poverty and hygiene. The goal of this research is to bring awareness to a topic that most people assume to be a basic human right, and whether or not it can be accessible to everyone.

# The Influence of Hip Hop on Black Communities

Atem Bol

Faculty Mentor: Professor Meg Knowles, Communication

My research will examine the ways hip hop music and culture have affected black communities in the United States in recent decades. Byron Hurt's documentary *Hip Hop Beyond Beats and Rhymes*, draws attention to the toxic masculinity associated with hip hop lyrics and the effect this has had on black women. I will be comparing and contrasting Hurt's 2011 documentary with the more recent documentary, "Jeen-Yuhs" featuring Kanye West directed by Coodie Simmons (2021). I will closely consider how these films illustrate hip hop's evolution over the last twenty years and particularly the change that occurred with the influence of Kanye West's first album, which shifted the way people look at hip hop today. Specifically, West's creativity made it possible for people within the black community to look at things with a fresh perspective, moving away from lyrics focused on disrespecting women, and glorifying drugs, prison and killing each other. This study will show that hip hop's changing culture has profoundly influenced the black community's priorities about everything from the way black people dress to how they approach societal issues. Hip Hop culture has an amazing influence upon black people but with that influence it also has some flaws and that is what I'll address within this paper.

## "Go Get Her": Seasonal Line Development for the Women's Business Wear Brand

Rochelle Hylton, Jessica Piper, and Madison Brown

Faculty Mentor: Professor Ji Young Lee, Fashion and Textile Technology

The Seasonal Line Development was a project in FTT 358 Fashion Forecasting class that was focused on developing an apparel line of the fashion brand for the ("FW22") fashion season. Through this project we were able to get an idea of how designers and merchandisers of the fashion brand develop a product line. In the project we had three phases to create a clothing line for our fictitious brand. First, through phase 1 Branding, we created a brand name, brand concept, target consumer profile, positioning map, product categories, and the price range of our products. With the brand name Go Get Her, we developed a business wear brand targeting young professional women aged between 22-45. During phase 2 Trend analysis, we researched the upcoming fashion trends regarding color, fabric, style, and design elements, using fashion forecasting techniques and reliable resources. During phase 3 Forecasting the seasonal line, we developed a theme for our line, "Style is Her Strongest Suit," and mood board. Our theme encompasses the strong, independent, and sophisticated working women's images. The overall mood and design of the garments allow for business during the day, and a little bit of fun at night. The color palette we chose mixes soft browns and light pinks that transition perfectly from sun to moon. Fabrics that compliment these colors are corduroy, knit, and cotton blends. Based on our textile/color choices and brand concept, we designed women's business wear with style combinations suggested. We designed a blazer and short set with tan fabric and a light-weight shirt underneath. Another design was a flowy dress out of a light beige colored fabric. We also designed corduroy flared pants with a peasant sleeved shirt. Our last design was a plaid skirt and a bishop sleeved shirt with a ruffle collar. These designs represent the power woman our project is about. They are fashionable and unique designs that will stand out in the workplace. We created these designs because they will help the woman who wears them to feel confident and powerful in what they do.

## Market Crash of Sports Cards During the Junk Wax Era

Justin Brown

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

This project looks at the mass production of sports cards in what is known as the Junk Wax Era, which takes place from 1987-1994 and how competition between the card manufacturers led to the mass production. The Junk Wax Era gets its name because most of the cards that were produced from this time are junk and are not even worth the cardboard they were printed on. The reason they became so worthless is because the companies at the time were mass producing the cards, and because there was no internet at the time there was no way of knowing how much they were producing. None of the companies have openly come out with the exact number of cards they produced during this era, collectors of this time have speculated it is 3x the amount that was normally produced. These companies were able to exploit the high demand of the collectors and mass produce their products. Collectors at this time believed they were sitting on a gold mine and thought one day their collection would be worth a fortune, and how could they not when the sole source of pricing their cards came from Beckett Magazine. Beckett Magazine at this time was pricing the individual cards 10x the price of the box. For my primary sources I primarily look at the Beckett Magazines between the years 1987-1994, as well as collectors from that time and their experiences, and lastly I also look at New York Times articles from this time, specifically in the business section as they promoted sports cards to be a good investment. My presentation will include sales by Topps, Fleer, and Donruss during the Junk Wax Era, as well as the prices of the boxes at the time, and what they are worth present day.

## Rootless

**Daunte Crawley**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

How has redlining contributed to poverty in Buffalo? In the United States, racism falls under redlining. Redlining was a federal policy that denied mortgages to families of color and people in or near neighborhoods with high percentages of minorities. Across the US this has caused devastating impacts on African American families by hindering their ability to own a home. We know that redlining is happening in the United States, but we don't know if that's happening here in Buffalo. Photovoice provides an opportunity to explore this question, photovoice uses people's photographic documentation of their everyday lives as an educational tool to record and to reflect needs, promote dialogue, encourage action, and inform policy. I'm going to take photos of examples of what redlining looks like in Buffalo, also look at the research to see if redlining is happening in Buffalo, provide local statistics about redlining in Buffalo, and include that information in my poster. My overall intention of the project is to raise awareness about redlining in Buffalo, the history of redlining in Buffalo, and how that impacts the Buffalo population today. My poster will include local resources, advocacy groups, and action steps people can take if they are interested in helping to address this problem.

## Manipulating Gap Junction and Hemichannel Activity with Mimetic Peptoids

**Anna Dano**

Faculty Mentor: Professor Derek Beahm, Biology

Gap junctions are intercellular channels that provide a direct pathway for the transfer of ions and small molecules between the cytosolic compartments of neighboring cells. They serve diverse physiological roles including synchronization of electrical activity, metabolic coupling, and signal propagation. Gap junctions assemble from the end-to-end docking of hemichannels composed of members of the connexin protein

family. These hemichannels have also been shown to serve physiological roles distinct from those served by gap junction channels. Traditionally, gap junction and hemichannel studies have relied on the use of non-specific blockers to assign functional roles for the channels in a targeted cellular process. There is a growing need for specific channel blockers to not only advance structure/function studies, but to develop therapeutics targeting channel behavior in physiological and pathophysiological processes. In the last decade, mimetic peptides have demonstrated ability to alter the activity of connexin-based channels. GAP-27 is a peptide designed against the second extracellular loop of Connexin 43 (Cx43) and has been shown to impair both hemichannel and gap junction channel activity. We synthesized hybrid peptide-peptoid analogs of Gap-27 that can improve cellular stability of the oligomer, while retaining the integrity of the side chains. A dye-uptake assay is used to measure hemichannel activity and a scrape-load dye-transfer technique is used to measure gap junction communication in Normal Rat Kidney (NRK) cells which is known to express Cx43. We will explore the blocking effects of proteolytically stable mimetic peptides in place of GAP-27 peptide on Cx43 hemichannels and gap junctions.

## Mentally Taxing

**Amanda Dutka**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is what poverty and mental health look like in the Buffalo area. The background information on this research project stems from online articles as well as online visuals. Mental health, trauma, and discrimination are prevalent across the country and connect to poverty. I used the photovoice method to answer the question stated above. Photovoice is a technique that solely relies on pictures to capture reality when performing research on a subject. I drove around Buffalo and thoughtfully took pictures of what best describes mental health for my poster. I also completed a SHOWeD analysis to help the audience understand my own perspective. I utilized five photos for my poster that draw a connection between mental health and the city of Buffalo. In conclusion, based on the photos and statistics, the research reflects what is really happening here in the Buffalo area. I chose this topic hoping that it would raise awareness about the correlation between poor mental health and poverty rates. Society should start addressing this issue more seriously because of how many people we can assist. On my poster, I have listed numerous agencies, resources and advocacy groups that can help individuals get involved in this issue.

## Mental Health: The Trauma with Poverty and Discrimination

**Grace Gallagher**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

In this research, we will be looking at the question of what does poverty and mental health look like in Buffalo, NY. The United States has been changing the way poverty and oppression are looked at, labeling living in poverty and oppression as trauma. Adverse Childhood Experiences (ACES) of children who are in poverty indicate that they have had more trauma than children that are not living in poverty. In this project and research specifically, I will be using PhotoVoice, or taking photos and explaining the meaning behind the photo. A photo can have a different meaning to every person who views it, so doing PhotoVoice can give the viewer another understanding of the photo. I collected data in high-poverty neighborhoods in Buffalo and different mental health facilities to take photos and explain these photos in more depth. Being able to examine mental health in Buffalo, NY can give us a better look at how mental health and poverty go hand-and-hand. In Buffalo N.Y., there are many ways poverty can be looked at. Looking at the photos from PhotoVoice can hopefully open the eyes of those living in Buffalo to know that mental health and poverty

are a coinciding force. I hope through the research of mental health and poverty in Buffalo will bring awareness to those in the community about mental health.

## “Affordable Housing” is Still Unaffordable

Janesa Gamblin

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is what poverty and housing looks like in Buffalo, NY. There are housing issues that are happening in the US. There are people who must choose between paying rent, eating or paying for their utilities. There's a Nationwide problem of people having to live in unsafe housing and who are dealing with housing discrimination. I am going to use photovoice to gather information on whether discrimination, unaffordable housing and slum lords is a problem in Buffalo. Photovoice is a participatory research method where you go out and take photos to give a visual of what's going on in one's environment. I went to the east side of Buffalo to take photos; I will choose 3 of these photos that best represents my poster. These photos will draw a connection to what's going on in Buffalo and across the nation. You will be able to see from these photos and local statistics that housing is a problem in Buffalo. My purpose of this project is to bring awareness to the housing crisis in Buffalo. What I hope to find is how effective is the fair housing act. My conclusion is what some may believe to be affordable housing is unaffordable. On my poster I will include local resources and ways people can get involved to on help promote change around this issue.

## The Role of Cannabis Use on Changes in Anxiety Symptoms

Francesca Giaquinto and Abigail Kruse

Faculty Mentor: Professor

Cannabis is one of the most commonly used psychoactive drugs worldwide and it has been associated with various mental health outcomes (e.g., depression, cannabis dependence, poor regulation of emotional responses). Researchers have found that one of the most common reasons that individuals use cannabis is to try to alleviate feelings of stress, as many cannabis users suffer from anxiety disorders. Although anxiety is one of the most diagnosed mental illnesses worldwide, there is uncertainty in the directionality of the association between cannabis use and anxiety. The hypothesis for the current study is that cannabis use is associated with changes in anxiety symptoms. To test the current hypothesis, a longitudinal survey was conducted which examined changes in behavior and substance use for college students. College students were recruited from Buffalo State College and completed a survey aimed at understanding experiences of college students. Participants were assessed using questions pertaining to their basic demographics, the Inventory of Depression and Anxiety Symptoms, and questions following procedures used by the Substance Abuse and Mental Health Services Administration. The Inventory of Depression and Anxiety Symptoms assessed symptoms associated with anxiety and mood disorders. Questions adopted from the Substance Abuse and Mental Health Services assessed the frequency of cannabis use, and how old the participant was when they first used cannabis. Two waves of data were collected from the survey, and there was approximately one month between each wave of data. Data collection is currently ongoing.

## Best Friends Turned Enemies

Charles Gilbert

Faculty Mentor: Professor Meg Knowles, Communication

What would happen if two influential but polarizing civil rights figures were so close, they might be considered blood brothers? And what if outside forces caused this friendship to end, resulting in these two

never speaking again? Malcolm X and Muhammad Ali were those two friends, and this paper will take a deep look into the 2021 documentary putting their friendship in context: *Blood Brothers* | Malcolm X & Muhammad Ali directed by Marcus Clarke. The documentary is based on the book *Blood Brothers: The Fatal Friendship between Muhammad Ali and Malcolm X* by history professor Randy Roberts and sports sociologist Johnny Smith, who serve as major interview subjects in the new documentary. The film takes advantage of a myriad of archival footage and interviews available from past biographies and documentaries, and the story is revealed through the selection and editing of this material. Malcolm X has often been demonized in the press for his beliefs and way of life. Even though Muhammad Ali's fundamental beliefs were the same as X's, he was accepted as a golden boy in the boxing ring and beyond. The paper will focus on how the media has influenced our perception of the relationship between these two, and how their stories have profoundly impacted the African American community, as well as the world's understanding of what it means to be black in the United States.

## Poverty & Housing

**Calvin Gourrier-Gamble**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The problem being addressed in my research is what does Poverty and Housing look like in Buffalo, NY. Across the country, the high cost of housing is impacting people who are living below the poverty line. For instance, people who cannot afford suitable housing due to the cost of living, are forced to live in communities with high crime rates, as well as homes that cannot uphold suitable living conditions. The method being used is Photovoice. Photovoice is a research method where you go out and take pictures to find examples that may correlate with my research topic. I will collect data by going out to different neighborhoods and looking at the geographical difference between the two. I will then look at the difference of housing costs for each neighborhood. After taking numerous photos in different areas of Buffalo, I will then narrow it down to the best pictures for my poster to help the audience understand my perspective of what I was seeing in these pictures that I took. In the final results I used a few photos on my poster, which show connection to what's happening here in Buffalo, as opposed to other places in America. Local statistics that support these photos; affordable housing is a problem in Buffalo. From my findings, Buffalo has some work surrounding this issue and I've included resources around the community that individuals will be able to get involved to fix this current issue. This issue has been an ongoing issue throughout the Nation.

## The Impact of COVID-19 on the Reinforcing Value of Food

**Morgan Harrington**

Faculty Mentor: Professor Naomi McKay, Psychology

It has been found that adolescents worked harder for an unhealthy snack compared to a healthy snack, like fruit. However, it was unknown whether stress would influence a participant's reinforcing food value. To answer this question, participants came into the laboratory and either went through a stress condition (consisting of a mock job interview) or a non-stress condition (playing solitaire). Afterward, they worked for a reward of M&Ms or grapes. In order to measure the reinforcing value of the food, the portions of food earned were monitored. In addition, stress reactivity was measured throughout the study. It was hypothesized that under stress, participants would play for more portions of M&Ms. This study was started in the fall of 2019. However, because of the COVID-19 pandemic, data collection was paused about halfway through. Data collection resumed in fall of 2021. It is possible that the COVID-19 pandemic affected results because it has been found that participants ate an estimated 14% more added sugars in 2020 than in 2019,

in correlation with the pandemic. Therefore, it was important to determine if the pandemic affected any measures of stress or relative reinforcing value of food. To determine if there were any significant differences, the reinforcing food value and stress reactivity of the pre- and post-pandemic groups were compared. It was found that in the stress condition, participants' anxiety levels remained higher post-COVID than those pre-COVID. It was also found that post-COVID participants in the stress condition clicked significantly less for food than those who participated in the study pre-COVID. However, there was no significant differences in the non-stress conditions or with clicks for reading. These results indicate that COVID-19 had a lasting impact on individual's ability to recover from a stressor as well as their relative reinforcing value for food.

## Gershwin: All That Jazz

Sarah Hencinski

Faculty Mentor: Professor Carolyn Guzski, Music

On February 12, 1924, George Gershwin (1898-1937) premiered an iconic entry in the emerging musical world of symphonic jazz that changed the way American art music was viewed. Rhapsody in Blue took the world by storm combining elements of jazz and classical music as a concerto for solo piano and large jazz ensemble. Gershwin, himself, played the premier of Rhapsody in Blue in New York City. Renowned bandleader, Paul Whiteman (1890-1967), brought jazz music to Aeolian Hall in New York City when jazz was considered and viewed as a form of popular music operating at a less serious level than classical art genres. Rhapsody in Blue became almost overnight the "best known concert work of the twentieth century." Gershwin's orchestration was completed by arranger, Ferde Grofé, featuring twenty-three talented musicians from Whiteman's band. Grofé completed the orchestration with Whiteman's band in mind since the musicians were capable of specific techniques and styles heard throughout Rhapsody in Blue: the famous clarinet trill opening also known as the "Glissando Theme" played a huge part in the arrangement. Rhapsody in Blue gained its popularity from Gershwin playing the premier and from being used in films and television. Gershwin also composed an opera, Porgy and Bess, using inspiration from African American artistic expression. Gershwin's Rhapsody in Blue embodied the jazz age and is an instantly recognizable composition to this very day.

## Health Does Not Equal Healthcare

Taliya Hendrix

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

For this project, I will examine if access to healthcare is different for middle to upper class neighborhoods and poor neighborhoods in Buffalo. In my project, I hope to examine the access to healthcare in middle to upper class neighborhoods, in proximity to access to healthcare in lower income neighborhoods. Nationally, it is evident that those in lower income neighborhoods are of poorer health than those that aren't. For my research, I will go into poorer neighborhoods, and middle to upper class neighborhoods and first take pictures of the facilities available in those neighborhoods. I want to examine the actual condition, and take pictures of the services offered in each facility in the separate neighborhoods. In addition, I hope to examine how many facilities there are in a given neighborhood, and how close in proximity they are to each other compared to the other neighborhood. I believe I will find that in poorer neighborhoods there will be less services available, and less health facilities in general in comparison to the middle to upper class neighborhoods. I tend to look in detail at the discrepancies in affective healthcare in all types of neighborhoods, and determine why funds aren't being allocated where they're needed. My research will highlight the problems people in poverty face with healthcare, and how with the help of



patient advocacy groups and individuals like ourselves, we can help curb the gap in healthcare between social classes.

## What Does Hunger Look Like in Buffalo?

**Tyisha Henry**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is ‘what does hunger look like in buffalo?’ I chose this topic because more than 38 million people including 12 million children in the United States are food insecure. In my poster I will be showing examples of hunger through images, I will use photo voice to determine if people in Buffalo are also experiencing these issues. Photovoice is a visual research methodology that researchers use to gather documentation with media, such as photos and video communicating issues of concern, while stimulating social change. I found that these issues are present in Buffalo. In 2016, Buffalo-Niagara's poverty rate was 13.8 percent, lower than the state rate of 14.7 percent and the national rate of 14 percent. Programs like SNAP and WIC are essential and do improve the health of millions of people in the US, but they never have been properly scaled and are perpetually the targets of shortsighted cost-cutting. This has been a very difficult line of work for me because I understand hunger and I have experiences with such conditions. I believe that it is high time people, even students in Buffalo State College to become aware of these issues. My goal is for my poster to raise awareness, encourage conversations about this issue, and motivate people to get involved in local advocacy to help address poverty and hunger in Buffalo.

## Predicting Traits of Political Activism

**Nathan Hurtubise**

Faculty Mentor: Professor Dwight Hennessy, Psychology

Political identities are considered an important part of identity to individuals with an interest in politics. The political party one aligns themselves with can influence their beliefs and could be a factor in determining what they do in support of these beliefs. Outside of political ideology alone, anger and aggression can be driving factors in individuals taking political action. Both aggression and personality traits have been shown to be an influential factor in determining if an individual will participate in political activism. Political activism may manifest as peaceful acts (e.g., peaceful protests, debates) or violent acts (e.g., riots). This study looked to determine how these factors may vary among different political identities and if political identity can be a predictor of actions one may take. Other factors were also considered such as the influence of family political beliefs and the impact of politically themed social media consumption. Participants were surveyed on their political identity, family political beliefs, aggressive traits, big five personality traits, and willingness to participate in both violent and nonviolent political activities. By analyzing the correlations between these factors, this study confirmed the conclusions of previous research which showed that political ideology is not necessarily the main factor for participation in political activism. Rather, it is factors such as high aggressive traits and personality traits which can be used to predict this behavior.

## Runway 2022: Power of Patterns

**Cameron Johnson**

Faculty Mentor: Ali Eagen, Professor Fashion and Textile Technology

This year's theme for the runway show is “Push for Progress” this covers topics of social injustice, queer liberation, and sustainability. As a textile design major, I am creating a collection of garments for the runway

show that serve as a representation against racism and social injustice of Black individuals. The outcome I want to achieve is to represent this topic that I have chosen to express my concern for and to inspire people to keep looking into this situation with hopes to relieve and resolve the situation all together for a better future. To do this I am incorporating colors that are symbolic of the fight for social justice, African heritage, and the push for African liberation in my collection. Using that as my color scheme, I will be combining vintage styles of patterns that I created paired with retro silhouettes based on the 50s, 60s, and 70s when the Civil Rights Movement and Black Power movement took place. By doing so, I hope to give people nostalgia that makes them think about any knowledge they have of this problem. Consider historical events that happened in the past and what has even happened in recent years and what could be done to resolve these issues and create equality for everyone. This project is very important to me and many other people and I think it would be a great way to promote conversation, inspire change, and to continue the efforts that were started in the past.

## Understanding Outstanding Springs: Assessing Anthropogenic Impacts on Florida's Historic Natural Springs

**Alexander Krest**

Faculty Mentor: Professor Tao Tang, Geography and Planning

Home to one of the largest concentrations of freshwater springs on Earth, as well as the highest number of first and second magnitude springs of any state in the Nation; Florida has been integrally linked to these unique geological entities and their ecosystems for centuries. These astounding waterbodies not only support a diverse array flora and fauna, but also provide for many anthropogenic means. Whether it be supporting our most basic needs in the form of drinking water, to more sophisticated underpinnings as a source economic stability for a region and the very way of life that localities experience thanks to these natural phenomena. Of the over 700 natural springs officially recognized in the state, 30 have been labeled as "Outstanding Florida Springs" that are to receive additional assessment and protections due to their inherent value and long standing first magnitude discharge classification. While these systems are generally located in the northern half of the state, which has spared them from some of the peninsula's largest population booms over the last decades, it is imperative that we gain an understanding of population shifts and their associated infrastructure that is occurring across the region in order to assess current and future threats. Whether it be nutrient pollution, excess runoff and associated sedimentation, direct physical disturbance, an influx of foreign chemicals and other contaminants, an increased risk from invasive species, and or a reduction in flow due to water withdraw from anthropogenic activities, a substantial increase in local populations could lead to detrimental short and long-term consequences for these delicate habitats. Through the use of GIS and a variety of open-source data platforms I will attempt to display metrics such as population changes, relevant permits, and pertinent infrastructure that may give us insight onto which springs may currently be at the most risk and which may become degraded overtime if conditions are not congruent with the systems' needs. This study will aid in the protection of these important ecosystems, and give interested parties insight into the often time overlooked northern Florida region.

## Senior Practicum: Town of Amherst Medical Use Inventory and Report

**Ava LaBella**

Faculty Mentor: Professor Jason Knight, Geography and Planning

The Town of Amherst has undertaken an Economic Recovery Plan to assess the social and economic impacts of COVID-19. Among its findings, the Town recognized an overall shift in land use and business in the medical industry, specifically the diffusion of service providers from operating within large hospitals to

smaller “boutique” medical service providers. This shift has resulted in new businesses and increased multiple vacant medical offices, as determined by a field inventory conducted by the Town within the Interstate-290 corridor. Buffalo State Senior Urban and Regional Planning students were tasked with extending this inventory into the I-90 and I-990 corridors to answer key research questions: What medical and healthcare uses exist in these areas? Is this sector growing in Amherst and the region? Which parcels would support growth and development of this sector? Our methodology included delineating the I-990 and I-90 study areas using Geographical Information System (GIS); identifying parcels within these study areas to inventory; using GIS to identify vacant parcels with redevelopment potential; and, finally inventorying uses in the field. The final report will assess the Town’s overall market position in the medical and healthcare industry and provide charts, graphs, and maps that help visually and spatially understand this sector. Further, the report will make recommendations about which sectors the Town should support based on an overall assessment of the regional market and the availability of land and buildings that would support new development.

## Where to Next? Invasive Species Distributions Across New York State

**Jade LaRock**

Faculty Mentor: Professor Tao Tang, Geography and Planning

An invasive species is a non-native species that is introduced into an environment for which it does not belong. In this new environment, the species thrives because it usually fills a niche that was not previously in the ecosystem. The main problem with invasive species is that they do not have any natural predators and therefore, can have populations grow at much faster rates than native species in that area. Invasive species also pose a threat to native populations because they can outcompete the native populations for resources or can destroy populations if invasive species are left unchecked. For my project, I would like to look at the spatial distributions of one or two invasive species found in New York State using the ArcGIS Pro software. This spatial analysis can be done using data from a website called “iMapInvasives”. This website provides data to the public on invasive species detections through volunteer and research work. This data will be used to analyze the spatial distributions in ArcGIS Pro of certain invasive species that are yet to be determined. Further research will also be conducted on these species to determine what type of environments these species thrive in best. From there, I will create a map overlay of the classifications of land types to help determine where these invasive species could potentially spread too. This project could aid in stopping the spread of invasive species by mapping where these species could spread to and potentially be able to use preventative action to help stop the spread and hopefully, work to eliminate the species.

## Hygiene Is Our Priority

**Brianna Laveglia**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The problem I am trying to answer in my research is: what does poverty and hygiene look like in Buffalo? Across the United States individuals that are homeless and families that are below or near the poverty line cannot afford or do not have access to basic hygiene products. These products that people do not have access to can be soap and water to wash their hands. There are also mothers who have to decide if they want to eat, be able to change their baby’s diapers or wash clothes. I will be using Photovoice to see the underlying connection between poverty and hygiene in Buffalo. Photovoice is a research method in which I will be going out in Buffalo to take pictures of what has to do with my topic. I will then narrow these photos down to the best ones and explain in an analysis, my perspective on why I feel these photos

represent my topic. There will be 3 photos on my poster that show what is happening with the hygiene problem in Buffalo. People in Buffalo are experiencing similar struggles to others across the US. Hygiene products are too expensive and inaccessible, which results in bad hygiene, affects one's health, and ability to be successful. My poster will include local resources/advocacy groups that show ways to get involved and promote change with this issue.

## Java QR Generator for PDF Information

**Jovannie Lopez**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

This research project will develop a PDF scanner and a QR Generator using the Java programming language for an organization called Paychex. Paychex is a Rochester based company that submits clients payroll forms online, views critical reports to use for decision-making, and chooses to add on other products, such as time tracking, HR functions and more. The PDF documents submitted by their clients need to be scanned and checked for a signature. Then the information from the important pages of the PDF documents signified by key terms on the corners of the pages need to be stored in the database of Paychex. A QR code will be developed using the information and placed next to the key term that is used to identify the PDF. The PDF documents can be in either Spanish or English and need to be able to tell the difference between English and Spanish. Another part of the project will be to check if the PDF has signatures in the required fields. If it does, it will go along without any issue. Otherwise, the PDF has to be flagged so that Paychex can get it signed by the client that filled out the form. Paychex provides documents such as a W-4, payroll information and other forms without any client information for testing purposes. They will provide more PDF documents that have information that clients would normally fill out as the project moves forward to test more aspects of the program. As more work is done on the project the scope continues to widen.

## Food Insecurity in Buffalo

**Reagan Mabika**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Do people in Buffalo struggle with food security? My project will explore this question. These days food insecurity is becoming a main comment topic for low-income populations in Buffalo. The method I am using to answer this question is Photovoice. I will take pictures of the city of Buffalo and use them in my research to determine if food security is an issue locally. According to researchers, the lack of funding to support the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and Supplemental Nutrition Assistance Program (SNAP) will lead to malnutrition later. Does Buffalo have higher rates of malnutrition compared to the rest of America? How many low-income families are using food pantries and how many kids are using the free lunch program in public school? This can be considered as a big factor that may promote healthy eating. The Buffalo population are not healthy because of what they are eating, especially the Eastside area. This is because of corner stores and not having enough public transportation to do grocery shopping. The United States government and other non-government organization, meaning even the private sector, may respond to this invitation to resolve the food issue in our community by providing enough funding. The interest of the community should be the priority of the American government.

## Far-Left and Far-Right Groups: Similarities and Differences in Rhetorical Strategies

**Cait Malilay**

Faculty Mentor: Professor Ann Liao, Communication

My paper will focus on the recruitment strategies of far-right and far-left groups. I will be using content analysis as my research method. My theoretical framework will be based on framing theory and studies of persuasion. Previous studies have focused on the recruitment strategies of far-right groups, but few studies have focused on the similarities and differences in recruitment strategies between the two groups. They may appear very different along the political spectrum, but they are still very alike. I will compare the two groups' similarities and differences. For example, how do they frame their messages? What do they look for when recruiting, and what audiences do they target? My coding scheme includes the following message characteristics and message frames: vulnerability, pride and unity, religion, sex, and race.

## Urban Stigmas in an Asphalt Jungle

**Mollie McCann Poblocki**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Does poverty and mental health discrimination look the same in Buffalo as it does across the country? Unfortunately, the answer is yes. In most cities comparable in size to Buffalo, incomes are declining, and poverty is growing. Based on several published studies, poverty has been tied to mental health illness and the urban discrimination of both. Most often it is easier for someone to assume that a person is suffering from mental illness rather than see that they're impoverished. But as depicted in many publications, poverty and mental illness are interrelated and cause dire situations. This has been found to be true in the City of Buffalo and my photovoice pictorial will demonstrate this. One of the most common relationships between poverty and mental illness is driven by unemployment rates. Here in Buffalo many businesses have closed or relocated to other cities, reducing employment opportunities. Not being able to find work, directly impacts a parent's ability to provide for their children and can cause higher stress levels, exhaustion, and physical illness. Additionally, chronic, and toxic stress that is brought on by poverty is known to cause depression and other psychiatric illnesses. These conditions cause problematic environments for children and societal discrimination. Therefore, my poster will include local organizations that are focused on providing employment assistance, and mental illness awareness, as well as programs that are designed to assist the whole family and remove stigmas. More importantly, it will demonstrate that social acceptance of these issues is key for a community to overcome them.

## Media Coverage on the AIDS Epidemic of the 1980s and Its Effects on the Gay Community in the US

**Thomas Olszewski**

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

In the early 1980s scientists in the United States discovered a new disease that would be the cause of death for thousands of Americans over the next decade. This disease would later be known as acquired immunodeficiency syndrome or AIDS. During this AIDS epidemic in the 1980s, the media (primarily newspapers and TV broadcasts) played a key role in distributing information about the disease as scientists discovered more about it. At the same time though misinformation was also being spread by the media that had a profound effect on the gay community in the United States. Due to the early discovery of AIDS in gay men, a certain stigma was created which made the gay community fall even more out of favor with the public. The goal then for this research project is to look at the origins of the disease in the United States as well media coverage on the epidemic and how this had a negative impact on the gay community and in

particular gay men at the time. This will be achieved by using various sources which include but are not limited to newspapers, TV broadcasts, medical documents, books, as well as oral histories from people who lived through this period.

## Princess Diana, Documentary Films and the Conspiracy Theory

**Kaelie Pabon**

Faculty Mentor: Professor Meg Knowles, Communication

Conspiracy theories play a big role in manipulating our understanding of history, and have flooded the media in recent years via the internet. In this study I will examine conspiracy theory driven documentaries. I will analyze two documentaries on the topic of Princess Diana's life and Death. "Diana Our Mother. Her Life and Legacy" is an HBO documentary authorized by the royal family in 2018. "Princess Diana, Tragedy or Treason?" is a TLC/Discovery documentary produced in 2017. I plan to compare these two films and the accuracy of their depictions of history, and discuss the disruption of the documentary film genre in the presence of conspiracy theories. In particular, my paper will explore whether the standards for representing reality, as posited by documentary theorist Bill Nichols, are changing due to the impact of a burgeoning conspiracy culture.

## Giacomo Puccini, La Bohème: The Tragedy of Love

**Thomas Passino**

Faculty Mentor: Professor Carolyn Guzski, Music

Giacomo Puccini (1858-1924) showed some of the greatest potential during the late Romantic period among Opera composers with *La Bohème* (1896), one of the most famous operas, Puccini adapted the popular novel *Scènes de la vie de Bohème*, (*Scenes from Bohemian Life*, 1851), by Henri Murger, with the help of his publisher Giulio Ricordi. Puccini's origins in Lucca and studies in Milan lead him to flourish in the stylistic period of late Romanticism, when opera composition originated elements of musical verismo, or dramatic realism, on the lyric stage. Although he showed great potential—even being known as the next Verdi—Puccini was no stranger to criticism and competition. Romances became stale and unrealistic, verismo benefited Puccini's need for true-to-life drama ("naturalism") admirably during the period. The complex duets and ensembles in the opera are one of the many beautiful and stylistic musical expressions, evoking rich sounds that accent the tragedy of love in the story. The Opera takes one's jealousy and confidence and expresses all they can to get the attention of those they want, and even though she is ignored, she finds her way to his heart. Experiences with love were some of Puccini's greatest inspirations, the other operas before *La Bohème* all include tragic love like, *Le Villi* and *Edgar*, and was not excluded from the same treatment. The correlations between his personal experiences and the music in *La Bohème*, expresses in the repertoire the realistic nature and the unrealistic expectations we all experience with love.

## Beethoven's Four Notes of Fate

**Noah Pinelli**

Faculty Mentor: Professor Carolyn Guzski, Music

Ludwig van Beethoven (1770-1827) greatest works are derived from his own personal experiences he has taken on in his life. Beethoven's *Symphony No. 5 in C minor, Op. 67* (1807), was his deepest and most expressive work at the time, due to the famous four-note opening motif that might be described as "fate knocking at the door." Beethoven had already composed four previous symphonies, so he was very experienced in the genre, especially with its controlling sonata-allegro form, obtained by the First Vienna

School. Although he was best known for his symphonic works, Beethoven also composed masterfully in the genres of string quartets, concertos, and overtures. The Fifth Symphony was inspired when Beethoven began to lose his hearing, which sparked his struggle against deafness. More succinctly his built-up depression, anger, and melancholy occasioned by his deafness. While grappling with fate, Beethoven's musical expression is seamless throughout the entire symphony, an inspiring artistic quality that drew me strongly to this piece. Beethoven's Fifth Symphony also includes a variety of textures and rhythms inspired by the French Revolution, as Beethoven was fascinated by the war period. Therefore, the theme of the Fifth symphony is the heroic struggle, which changed what people thought music could do, and what music could be. In my analysis, I hope to reveal Beethoven's historical inspirations and influences, including those of his predecessors in the Classical style, "Mozart" or "Haydn," for this iconic symphony.

## Clarifying the Waters

**Allarae Prigan**

Faculty Mentor: Professor Jason Grinnell, Philosophy

When it comes to environmental and biological fields, the language used to convey information to the public can lead to misconceptions. In this study, these misconceptions are clarified by setting a careful characterization of several key terms such as "conservationist" or "preservationist." From there, these terms are evaluated using the case study of rainbow trout in Western New York and the Pacific Northwest. All research was acquired via biological or environmental databases and government organizations. Though language misconceptions can seem harmless on the surface, the effect of using terms incorrectly can lead to a wider array of misinformation which can affect why people interpret environmental events the way that they do.

## Buffalonians and Homelessness

**Maliha Rahima**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Do all Buffalonians have access to safe, affordable housing? People are facing different forms of inadequate housing and homelessness nationwide in America. Unfortunately, these issues are not correctly represented in the media or the government. This is mainly due to our society's limited understanding of what "Homelessness" could mean. Through this project, I wanted to research if people are facing similar housing issues in Buffalo. I used the Photovoice method to collect findings for my research. Utilizing the Photovoice method, meant that I walked around different neighborhoods in Buffalo and took several pictures for my research. I selected three pictures that highlighted and summarized my overall take on the housing issues in Buffalo. According to the local statistics and my Photovoice findings, I came to the conclusion that Buffalo is no different from the rest of the nation when it comes to inadequate housing. This means the city administration of Buffalo has a lot of work to do regarding this issue. My intention for this research was to draw the community's attention to the different forms of housing crisis Buffalonians are facing. Also, through this project, I wanted to begin a community discussion regarding ways people can get involved locally to improve the current situation of the housing crisis in Buffalo.

## Holst: How the Planet Revolved Around Him

**Noah Reed-Eason**

Faculty Mentor: Professor Carolyn Guzski, Music

Gustav Holst's (1874–1934) seven-movement orchestral suite *The Planets* (1914-1916) portrays our solar system (excluding Pluto, which had not yet been discovered) and its deeper expressive meanings. The musical concept of *The Planets* is expressed by the unique characterization found in each of its component movements. My project highlights the suite's most famous movement, "Jupiter: The Bringer of Jollity." Holst's compositional technique, artistic style, and individuality were influenced by Romantic and Modernist composers such as Richard Wagner and Arnold Schoenberg. His use of repetition, ostinato, countermelody, and syncopation bring out Jupiter's character through the music. This movement is all about the mystery, and how music can be so marvelous, but also fills listener's minds with wonder. I chose this movement to dive more deeply into Holst's artistic perspective on Jupiter and to explore the "out-of-this-world" experience of the movement. *The Planets* remains one of the most popular suites in the orchestral repertoire to this day for its truly awe-inspiring musical aspects

## I Wanna Be Your Schu-Mann: Male Longing Through a Feminine Voice

Trinity Ridout

Faculty Mentor: Professor Carolyn Guzski, Music

Adversity often sparks creativity; faced with opposition from his beloved Clara Wieck's father Friedrich, Robert Schumann (1810-1856) composed the song cycle *Frauen-liebe und leben* [A Woman's Love and Life], op. 42 (1840). An ongoing lawsuit among the disputing parties inspired what Schumann referred to as his "year of song," during which he composed over one hundred *Lieder* [German art songs], many of which were written for or about his lover Clara, who was the most famous woman pianist of her time. Adelbert von Chamisso's original *Frauen-liebe und leben* poetry details a woman's devotion to lifelong union with her man. Schumann excludes Chamisso's final poem, which is addressed to the woman's granddaughter and describes her life and the loss of her husband. Schumann concludes instead with the eighth poem, "Nun hast du mir den ersten Schmerz getan" [Now you have caused me my first pain] which strikingly and painfully recounts the husband's recent death. This finale includes an extended piano postlude that recapitulates the first lied, connecting the couple's first meeting to the end of their life together. Schumann's musical setting throughout the cycle expresses the woman's emotions with deeper complexity than Chamisso's text. His melodic lines are exquisitely nuanced and emotionally tumultuous, conveying the woman's natural qualms alongside her joy. Schumann's own dedication to Clara Wieck began when they met in 1835 and withstood her father's hatred of him, as well as the lawsuit that would eventually grant Clara permission to marry against her father's wishes. This celebrated *Lieder* cycle was composed a few months before their wedding and perhaps reflects Schumann's own fears that his love for Clara might not ensure their happiness, and that Friedrich's accusations of his unworthiness might come to fruition. While conceived from a woman's perspective, *Frauenliebe und -leben* is a sensitive and honest expression of Schumann's great and encompassing love for his future wife.

## Uirapurú: Villa-Lobos Relentless Search for Originality

Dynelis Santana-Quintana

Faculty Mentor: Professor Carolyn Guzski, Music

Heitor Villa-Lobos (1887-1959) was a Brazilian composer known for his obsession with maintaining originality by deliberately staying away from "traditional" European composition techniques. He achieved this by infusing folkloric elements into his music, which focused on indigenous rhythms and melodies of Brazil's Pre-Contact period. *Uirapurú* (1917), one of Villa-Lobos best known symphonic poems, guides the listener through the story of a group of Native Indians that were lured into the forest by the song of a bird (*Uirapurú*). The symphonic poem is a genre commonly done in one movement, that illustrates or evokes a



story, poem and/or painting. The symphonic poem genre became more prevalent during the romantic period because of its use of techniques such as word-painting and narrative arcs, because of this, Uirapurú is considered Program Music. The story found in Uirapurú was written by Villa-Lobos himself, drawing on inspiration he found in stories told to him by his father in his childhood. As an artistic modernist, Villa-Lobos remained unafraid to attack the boundaries of compositional techniques, form and orchestration following the footsteps of early 20th century composers such as Shostakovich and Stravinsky. Because of Villa-Lobos' desire to maintain originality in his music, he avoided serious instruction in European technique and artistic practices. Instead focusing on listening and studying books and articles on Brazil's indigenous musical expressions, with the goal of injecting as much of this style as he could into his own works. Despite Villa-Lobos strenuous efforts at originality, it was still possible to hear derivations of composers such as Debussy, Wagner, and Stravinsky. I shall explore how Villa-Lobos created his own unique space within the classical music genre.

## Mental Health and Poverty—the Chicken and the Egg Problem

**James Sciandra**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Throughout society it is eminent that mental health and poverty are two great problems our world faces, but does poverty cause mental health issues or does mental health problems cause poverty, and what does this look like in Buffalo compared to the rest of America? Nationally, poverty has been linked to mental health which affects parents and children mostly, while also creating a never-ending cycle of chaos in one's life. I used photovoice to document and take pictures of direct examples in the community of Buffalo. By using photovoice I was able to go around Buffalo and take up to 50 pictures and narrow down to my best three to exemplify mental health and poverty in Buffalo. Buffalo has a not so good reputation attached to it as of late when it comes to poverty, the city has a poverty rate of 30.1% in 2019, this is nearly triple of the national average which is 10.5%. My poster will show that Buffalo is no different from the rest of the country—people in poverty struggle with mental health. While my research cannot answer which came first—poverty or mental health— it will show that poverty causes increased stress which can impact mental health and that mental health issues can create barriers to someone getting and staying out of poverty. I hope that by getting to take a look at this it can inspire individuals to make change in their community and support those who struggle with poverty and mental health. Poverty and mental health is a problem in Buffalo, learn on how you can help the issues directly.

## In 50 Years, Minorities Will Be Homeless

**Rashida Scott**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My project will examine if African Americans experience unfair lending practices in Buffalo and how that has impacted home ownership and overall wealth in Buffalo. Homeownership is a steppingstone to wealth in American society, it can be leverage or even willed, to give future generations an economic head start. Due to unfair lending practices this wealth is disproportionately distributed. African American's and other black minority groups are more vulnerable to foreclosure than white homeowners. More than a thousand minority families are at risk of losing their homes because of unethical practices of lenders. Photovoice methodology will be used as a form of collecting data in correspondence with other materials. The photovoice method is a process that includes taking images of the community and specific issues being researched. It allows for a more intimate connection between the researcher and the researched. As a result of my research, I can conclude that the practices of lenders and the framework for housing policies

has allowed the racial wealth gap to continue to increase. Buffalo prevents minorities from homeownership. The goal is to highlight how these unethical practices have been allowed throughout history, how it affects the Buffalo community specifically, and to generate ways to create long lasting change.

## Synthesis of Heterogeneous Backbone-Containing Peptidomimetics Through the Solid-Phase Approach Using *N*-tBoc Protected Heterocyclic Amino Acids

**Gabriel Smith**

Faculty Mentor: Professor Sujit Suwal, Chemistry

Foldamers that are created using novel chemical scaffolds demand careful chemical crafting, this is because the resultant oligomer should preserve the native backbone peptide conformation while maintaining the intramolecular H-bonds and the sidechains' orientation in the 3D space. With the ever-increasing proteomic complexity, the novel chemical scaffolds that render structurally diverse foldamers are in huge demand. These foldamers-derived mimetic peptides can be used towards studying several biochemical mechanisms under normal and diseased states. With this aim, we recently reported a synthesis of *N*-tBoc-protected amino esters through Buchwald Hartwig amination and showcased two dozen structurally and functionally diverse amino esters. Based upon the observed differential rate of reaction among the aromatic halo esters, we also proposed a plausible reaction mechanism. Currently, we are exploring the compatibility of these molecules towards creating a heterogeneous backbone containing peptides and peptoid through a solid phase synthesis approach.

## How Hygiene is Associated with Poverty

**Eden Urbanek**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research presentation will be based around hygiene and how it affects poverty in Buffalo. Most people fail to realize the domino effect hygiene has on pushing those towards poverty, or pushing those already in poverty deeper down its seemingly inescapable hole. People across the United States in poverty struggle with staying clean, such as washing hands, showering, having a place to use the restroom, and so on and so forth. Due to these obstacles, obtaining and keeping a job becomes more of a challenge than it typically is. Poor hygiene in children whose parents cannot afford things like diapers or new clothes affects their work and child care situation(s). I want to see how these specific topics relate to those living in poverty in Buffalo, and research ways in which these issues can be solved or at the very least how to support those who find themselves in these situations. I will be using Photovoice to showcase this issue by capturing images in which I believe represent poverty and hygiene in Buffalo. Many people do not attribute personal hygiene with poverty. I expect to find surprising data with higher-than-expected numbers. My research poster will help to bring more attention to this issue. I anticipate my future research to be as shockingly informative to everyone who reviews it as it will be to me. Hopefully, after viewing my poster, people will feel motivated to take action and seriously address this issue locally.

## Tin-based Perovskite Solar Cells: Analysis of Machine Learning for Simulated Bromine Doped Solar Devices

**Joseph Wikar**

Faculty Mentor: Professor Saquib Ahmed, Engineering Technology

With the need and demand for alternatives to fossil fuels in the clean energy sector, perovskite materials (with an ABX<sub>3</sub> structure, where A is the cation species, B is the metal and X is the halide) are a key area of research because of their high performance and low costs in utilization within solar devices as the light capturing material. Ideally, we are looking for non-toxic versions of these materials that are good for the environment and inexpensive to replicate. The current standard for perovskite solar devices is to use a lead-based material which showcases high efficiency and stability, however this is not necessarily good for the environment. In this study, tin-based perovskite material based solar devices were analyzed using supervised machine learning (ML) to accurately predict the optimum bromine doping concentration in the perovskite layer. Certain material parameters were specifically chosen in this line of study due to their tunable and modifiable nature. These parameters include halide doping %, electronic bandgap, electron affinity, device series resistance, back contact metal of the device, and acceptor concentration. The first step performed in the process was analyzing a purely tin based system to determine the device power conversion efficiency (PCE) to achieve a baseline value of 6.71% for the data before any bromine doping was simulated. To perform these simulations over 42,000 different devices were built using a program called a solar cell capacitance simulator (SCAPS). The goal of the study was to find what level of bromine doping yielded the highest PCE return. Throughout the course of the investigation and using the algorithmic and machine learned tools, final PCE values of 20.72% for Br22 and 17.37% for Br25 were achieved (with Br22 indicating bromine levels of 22% and Br25 is 25%, with the remainder being iodine). Compared to alternative lead-based perovskite solar devices which yield an average PCE of 23%, the bromine-doped, tin-based devices give very comparable performance to their lead-based counterparts. The research highlights the importance of utilizing smart data analytic methods to pursue alternative materials that that yield a high-power output and are safe and non-toxic.

## Enchanting Musical Library

**Nicholas Willard**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The Buffalo Music Hall of Fame currently has their database formatted into an Excel file and are looking towards new ways that they can improve their database management, entries, and reports. This research project looks towards transferring the Excel spreadsheet into a SQL database, then linking it to another database. It will also create reports based upon data in the database as well as being connected to a form so that the users may fill out data on the front-end and have it saved to the database. The reason for this is because users will have an easier time uploading data into a form rather than scrolling through an Excel file where they may accidentally enter data into a wrong row. The programming languages that will be used for creating the database, report, and forms are PHP, HTML, CSS, and SQL. One of the preliminary concerns for this project is that the programming language being used may be swapped at a later date due to not knowing which environment will be used for the code. The purpose of this project is to simplify the data entry process and create a more flexible and long-lasting way to generate the data within the database into a meaningful result. Something that the audience can expect from this project is a working database that is connected to a form and capable of retrieving the data while also being able to create a report.

## High Cost of Housing Across America: Foresight of Buffalo New York

**Robert Williams**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The question I am seeking to answer in my research is, Does Buffalo have affordable housing for people living in poverty? People across the country are struggling to stay housed because wages have not been

growing significantly for decades while housing costs soared. I am going to use Photovoice to see whether or not if the cost of housing is affordable in the city of Buffalo. Photovoice is a participatory research method where you go out and take pictures and you utilize these pictures to describe, explain, reflect, reflect upon documents, and communicate issues of concerns. I went out to the city of Buffalo, and the area of Williamsville on different occasions and took over 25 photos overall and narrowed them down to ones I believe fit for the best representation of the topic. I completed a SHOWeD analysis to help folks understand my perspective of what I was seeing in these photos. For the results, I narrowed my overall selections of photos down to 3 on my poster. These photo's draw a connection between what's happening here locally in Buffalo and Williamsville to what's happening nationally. We can see from these photos and local statistics that housing is a problem in Buffalo. Based on knowledge, I may see a great deal of homelessness. With my research poster, I am hoping this will raise community awareness, and encourage policy change.

## Putting the "Fruit" Back in the Fruit Belt

**Jared Zajac**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The dilemma I'm trying to address in my research is what does access to healthy food options look like for residents living in poverty in the Fruit Belt of Buffalo, NY. In America low-income neighborhoods are dotted with fast food restaurants and corner stores. The issue stemming from this is that while there are plenty of options to eat, they are all high calorie and low nutrition. Children of these areas whose eating habits are formed in childhood become more susceptible to chronic health issues and added healthcare costs later in life. I plan to go out and explore this issue using Photovoice to see what the Fruit Belt residents have available to eat. Photovoice which employs photography will allow me to present visual images of what I found. I will give you the viewer my best representative photos concerning this issue. Through a SHOWeD analysis you'll view the pictures from my perspective. I expect to find a place that was originally named the fruit belt for all the gardens its settlers planted, has barriers to getting high nutrient foods these days. Low-income areas in Buffalo continue to struggle with making healthier options easier to obtain. My poster will include ways to help put the "fruit" back in the Fruit Belt and make healthy eating accessible to everyone.

## Document Identification System

**Karina Zayas**

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The research project consists of working with a company called Paychex, Inc. This company is known as a provider of human resources, payroll, and benefits outsourcing services for small to medium-sized businesses in America. The project team consists of a development team from Paychex and a group of students from Buffalo State to construct a program. This program will solve the issue of clients requiring paper documentation that Paychex utilizes for their electronic document completion process. The program will also provide a paper completion process that can be seamlessly integrated into the existing onboarding tracking system. It will affix a unique identification (QR-Code) to a set of electronic documents that are to be manually completed by Paychex clients. When the documents are returned the system should accept the PDF submissions and recognize the QR-Code. It will also determine if the document is complete (signature and prioritized pages), and provide feedback on the content of the submission. The program should be able to output multiple documents, with each page uniquely labeled. It will also accept PDF submissions that contain multiple documents in a single file. The team will use the Agile development style to work together, communicate, and self-organize through the use of the Scrum framework. A JIRA board will be applied to

demonstrate the progress of the project. The language for this program will be Java. A variety of Java packages are used to perform the functions of the project.

## Automation of Fintube Testing Apparatus

**Mustafa Abdelfadeel, John Lewis, Shon Culbreath**

Faculty Mentor: Professor Jikai Du, Engineering Technology

Ingersoll Rand (IR) is a company in the business of manufacturing and selling compressors. IR has a testing apparatus for fintubes which are used in the intercoolers between stages of compression within a compressor. When IR first approached us with this project, all of the controls were manual and this was very time consuming. They expressed a desire to automate this system to make it more convenient to operate, to which we obliged and worked with them to automate their testing apparatus for fintubes to be automatic and more efficient. After visiting the test facility a few times and taking a look at the current set up, we created several proposals for automating each component being used in the testing apparatus. Afterwards, we chose the most desirable proposal for each component and created a budget along with a project timeline based on the proposals chosen. We then installed the new components within the testing apparatus and created custom logic in Labview to automate the testing process. Utilizing our new hardware and software, we were able to automate the testing apparatus and develop a faster, more automated, and easier to use testing procedure which enabled IR to test out a wider variety of test conditions for their fintubes.

## Is Mental Health a Concerning Issue Related Within Poverty?

**Makena Adams**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Do people in Buffalo that are living in poverty also struggle with mental health? In the United States, people with mental illness are at risk of poverty. One reason is it can intrude on their personal relationships and their career. But also, economic issues, poverty, can be harmful to the people's mental health because poverty isn't something people want. Poverty and mental health go hand in hand because poverty is in direct correlation with higher rates of depression and other mental illnesses. Adversity within childhood is connected to poverty within their adult life because of what they have gone through. Using Photovoice, I will explore whether this is also true in Buffalo. I will research local information and community resources. I expect to find information that I haven't yet broke the surface on. I think that what was stated is like what is happening in Buffalo. I expect to find the statistics to shine light on what others don't know exist and open the eyes of people. With this project I want to bring awareness to the correlation between mental health and poverty. It isn't talked about enough because people think they understand, but they don't have all the information to be knowledgeable about the impacts mental health and poverty have on the city of Buffalo. There needs to be more attention brought to this to help the people who are struggling with this battle.

## Three-Phase Power Transformer Connections Trainer

**Alan Westman, Robert Johnson, Bandan Gurung, and Yahya Alshuabi**

Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

Three-phase transformer connections module has been developed for training utilities line technicians in the basics of measuring voltage magnitudes and phase angles of three-phase power systems and visualize them in order to maintain proper phase sequencing for various transformer connections. The project results in development of a device capable of measuring and displaying results for two sets of three-phase

voltages. Existing meters allow displaying of only one set of three-phase voltages. The training module will be used by National Grid and other power companies to train their workers in a safe manner before they commence their job on high-voltage equipment. Three-phase transformers can be connected in a bank using three single-phase transformers. This allows various standard connection schemes. Existing standards, such as ANSI standards and National Grid standards were investigated as well as scholarly sources describing electric measurements methods. However, the complexity of possible connections may lead to improper phase sequencing, which can lead to failure of connected devices. It is imperative to obtain appropriate phase sequencing. This is accomplished by the development of the training module and displaying information in a way easily comprehensible by line mechanics. Existing methods are available to measure and display results for only three outputs. The project develops methods and devices to measure and display six outputs, which was not done before and not available commercially. Based on the project goals, the following approaches/methods were utilized: decomposition, functional analysis, synthesis, testing, and evaluation. Larger systems were divided into subsystems with their own objectives; individual subsystems were completed with the goal of integrating them into a larger and comprehensive system.

## William Grant Still: The Dean of Black Composers

Quiana Bell

Faculty Mentor: Professor Carolyn Guzski, Music

William Grant Still (1895-1978) is one of the greatest Black American composers and music arrangers. Still is the first Black American to have a major symphonic work, his Symphony No. 1 ("Afro-American"), performed by a major orchestra, the Rochester Philharmonic Orchestra, in 1931. William Grant Still attended Wilberforce University in 1911 studying to become a composer of concert music and opera. Subsequently, around 1916 he enrolled into Oberlin College to study theory and counterpoint. One of his most important and influential teachers would be French conductor and composer Edgard Varèse, who encouraged him to compose with larger autonomy in expression. One of Still's greatest and most frequently performed piano suites is Three Visions, dedicated to his wife, pianist and librettist Verna Arvey. Created in 1936, Three Visions is comprised of three movements: "Dark Horsemen," "Summerland," and "Radiant Pinnacle." William Grant Still created a highly original conceptual work on the obscure mysteries of life and death whose interpretation presents a significant challenge to performers. The first movement, "Dark Horsemen," was intended to be perceived as the human soul coming to death and divine judgement, which made it natural for "Summerland," the second movement, to represent when the soul's entrance into heaven. Of the three movements, "Summerland" is the most simplistic in its form, with great melodic appeal, multifaceted harmonic coloring, and profound transcendent timbre, masterfully achieved with unnecessary complexity. According to his daughter, Judith Anne, Still was very fond of this movement, as he frequently used it as a form of music therapy. Seeing that Three Visions is masterful in pianistic poetry, William Grant Still very well might have been influenced by the Romantic era composers, who are known for the use of poetic narrative in their works.

## Autotoxic Effects on Cosmopolitan *Arabidopsis thaliana* Ecotypes

Mimi Byrne

Faculty Mentor: Professor Robert Warren II, Biology

Interspecific competition is a main priority plant species must undergo to successfully survive, but intraspecific competition also is a big challenge for plants. Many plants, for example *Medicago sativa* (Alfalfa) and *Kalanchoe Daigremontiana* (Devil's Backbone) deter the growth of their daughter plants that are in a close radius. This behavior is a type of allelopathy called autotoxicity. Autotoxic plants directly

attack other plants by releasing phytotoxic chemicals that inhibit seed germination and seedling growth. In this paper, we will investigate autotoxicity of *Arabidopsis thaliana* in seed germination and seedling growth. We will look at 6 different natural ecotypes of *A. thaliana* (Africa, Sweden, Libya, Germany, Portugal, and Finland). To test allelopathic effect in seed germination, we will be using an agar gel method. This method measures the effect of dried leaves or extracts through an agar gel in which seeds are germinated on the top layer. If the different ecotype seeds germinate more successfully than the same ecotype seed used in the agar gel, then autotoxicity is taking place. If the same ecotype seed, that is used in the agar, grows more successfully than the different ecotype seeds then allelopathy is taking place. For the seedling growth experiment, we will be growing different ecotypes to full adults then planting seeds of each ecotype under each full-grown adult. As research is still ongoing, we expect that plants from the same population will impose greater autotoxic effects on the seeds/seedlings than those from separate populations. Contrarily, many clonal, non-native plants grow in dense monocultures, suggesting that closely related individuals who share similar allelopathic compounds will have fewer negative effects on seeds and seedlings than more distantly related congeners.

## How Does the Refusal of Political Power Show Itself in Buffalo, NY?

Jaylee Cabrera

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

How does the refusal of political power show itself in Buffalo, NY? I selected this topic because it is an important issue that is often overlooked. I learned how much the government does not function effectively. Politics is often a game for the rich, which means that future office holders may be blind to working-class problems. In the United States, the government is more likely to strip low-income individuals of their rights than to protect them. The Ninth Amendment to the United States Constitution states that the federal government does not own the rights in the Constitution, but so does the people. In the matter of that, lack of political power can prevent generations of families from lifting themselves out of poverty. For example, any citizen should be eligible to run for office if they satisfy the age and residence conditions and individuals living in poverty do not get government assistance for and that they are eligible. I intend to use photovoice as my research method to present Buffalo's lack of government assistance and power to the people and utilize the photos to demonstrate that it is a real and continuous struggle in poor towns in Buffalo. These struggles also include housing, healthcare, education, humidity, hygiene, unemployment, and hunger. This research will have a significant influence on others because it will broaden their understanding of political concerns. Millennials have consistently maintained more liberal views on political problems and the contemporary political atmosphere than older generations.

## The Deprivation Diagnosis

Nyla Chappell

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What does poverty and mental health look like in Buffalo? Across the country, people living in poverty often also struggle with mental health issues. This is due to their living situation as it brings on another level of stress figuring out even the simplest daily task on top of other stress factors. Tasks including, figuring out the next meal or even how to get diapers for their children can cause stress and trigger mental health symptoms. Mental health care needs to be more accessible, particularly to communities with high rates of poverty, for this reason. I've touched on the fact that people need to be more aware that the people living in poverty are more likely to deal with real mental health issues due to their situation. I'm going to use photovoice to see if mental health and poverty are linked here in Buffalo. Photovoice is a research method in which photos are used to visually show a concern or bring awareness to a topic. I've taken multiple

photos to use in my research to show my analysis on this topic. From those I choose 3 pictures to show locally that mental health and poverty do tie in with each other. My research has shown that more awareness needs to be brought to this issue in Buffalo and general. On my poster I've shown ways and named resources to help everyone get involved.

## The Mental Effect of Pessimism

**Michael Coronado**

Faculty Mentor: Professor Jane Sullivan, College Writing Program

The power to imagine a future is essential for creating it. Pessimism is a negative mental attitude in which a pessimist tends to focus on the negatives of life and anticipate an undesirable outcome from a situation. Pessimism, while not recognized as a diagnostic category in the DMS5, may well be sabotaging our hope for the future. Depression often has a focus on past events, but pessimism is more like what trauma victims experience impacting their ability to form goals for the future. Since trauma and pessimism both affect how people see the future, they should have similar impacts on the brain and how people think and feel. After prior IRB approval, this research will compare the brains scans of people who have experienced trauma to the brains scans of people who are long-term pessimists, utilizing fMRI technology. Participants would be shown various stimuli and ask to respond during the brain scan procedure. Responses will be recorded and the changes in brain activity shown by the fMRIs will be compared. The findings of this research has the potential to suggest that pessimism is related to trauma and that pessimists could benefit from the same treatment as trauma victims.

## Going for the Gold: The 1980 Olympic Hockey Teams

**Evan DiPasquale**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper I will consider differing national approaches to winning in sports by comparing the documentary Red Army by Gabe Polsky, and Do You Believe in Miracles: The Story of the 1980 U.S. Hockey Team. There are two distinct sides of the story told, the American and the Soviet version of the pivotal rivalry in these films. In the United States, the game was very publicly lauded as the Miracle on Ice in the 1980 Olympics, engendering national pride, but Russian historization of the event has not been as well known. These documentaries have different approaches to showing what went on for each country during the time leading up to the Winter Games. Winning was a national priority that put enormous pressure on players in the Soviet Union. Soviet players were also soldiers in the Red Army living under threat of being sent to Siberia if they did not perform up to expectations for the State. This extreme emphasis on winning in sports was a means to prove to the world the superiority of the Soviet system. Were there similar pressures for the American players? The question to be examined is what underlies the need to win in American sports, and how does it contrast with the Soviet approach?

## Jim Crow's New Disguise: The Power of Politics on Poverty in Buffalo

**Olivia Evans**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Does poverty effect marginalized groups from having proper access to our voting process in Buffalo? In our democracy every vote should count and presently every voice is not being treated with the weight that it should be. People in poverty are restricted by barriers that limit their ability to have the opportunity to exercise their rights. This is not only a violation of their liberties it also has a very prominent effect on the



policies that are incorporated into our communities. The devastating divide between average struggling voters and wealthy incumbents creates a cyclical system where minorities' voices and opportunities are continuously silenced and their ability to receive aid is directly affected. These politicians may not have the proper insight into the everyday impoverished household to be able to truly understand their struggles. This leads to lazy policies being implemented that may have good intentions but are not fully benefiting those in need. Without their right to vote and the barriers that limit their ability to vote, impoverished citizens are continuously looked past. While using PhotoVoice, I will capture the essence of this process through the use of photographs to emphasize these barriers in Buffalo. These photos embody the struggles that come from the consequences of not protecting every Americans liberty to vote and direct connection to the barriers within our own community. Overall, the aim of the project is to emphasize the divide between policy makers and policy users because of the inadequate access to voting for people in poverty. If the people in our communities are unable to vote, subsequently their opinions are not being heard and their view on situations that directly impact them are overlooked. I hope that my project can raise awareness of the disconnect in politics and how we as a community can combat it.

## Housing in Buffalo

**Haley George**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

How does facing poverty effect housing in Buffalo, NY? Across the country, people who are struggling with poverty are dealing with many issues, including housing. We see this in Buffalo, many families and individuals who face poverty struggle with renting or purchasing a house. This can lead to many people becoming homeless, so I wanted to take a deeper look on how we can help individuals find solutions, so they do not have to become homeless. I wanted to look into the challenges people face on a daily basis and what services that can help them, so they don't have to lose their homes. People could be facing health issues, a loss of a job which can lead to them not being able to afford housing. Finding a solution like getting people set up a for good job or finding affordable treatment could help the problem we face with poverty and housing. Many people who are facing poverty, have run down homes and I wanted to look into solutions on how we could fix or help. For this research, I am using photovoice to collect data and information about the housing problem here in Buffalo. I went out into the community and captured many pictures that illustrate my theme of the housing problem. You will see the issue on housing in Buffalo and learn about different wayswe can build up the city and make sure the community feels safe and I am hoping it will engage people into getting involved and helping to promote change in the housing issue in Buffalo.

## Broken Buffalo: How Poverty Affects Mental Health in the Community

**Connor Greczyn**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research will explore the link between poverty and mental health, an area of sociology commonly overlooked by researchers and scholars alike. About 11% of males working full-time in first-world countries were diagnosed with common mental health problems in 2016, whereas 33% of economically inactive males in the same demographic were diagnosed with the same issues. Studies have also shown that individuals on a housing benefit are more than twice as likely to have common mental health problems. I plan to use Photovoice to exhibit how this gap affects the people in my community in Buffalo, New York. My preliminary research has shown me that Buffalo suffers from a surprisingly high poverty rate of 30.1% versus the national average of 12.3%. Couple this with above-average rates in major depression episodes, alcoholism and substance abuse, and you could start to see a correlation. I want to demonstrate that there

is a correlation-I expect to find that the fear of starving or missing rent causes enough stress to trigger mental health issues within impoverished communities. I hope that this project will raise awareness of our own personal stigmas towards homeless people, and make people realize that most of the time, it isn't one individual's fault that they are homeless or living in poverty to begin with.

## How Poverty Affects Housing in Buffalo

Emily Grinnell

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The problem that I am trying to address in my research is what does poverty and housing look like in Buffalo. Throughout the nation, safe and affordable housing is difficult to find. This is due to the high cost of living and low wages. Conditions like weather can also affect how a person in poverty may live. I am going to use photovoice to see if the issues of low wages, the high cost of living, and the weather are housing issues here in Buffalo. Photovoice is a research method that uses photos to capture issues of concern in a specific area to then be used to bring about change. I went out into the Buffalo area and took an array of photos that I thought best exemplified the issues of housing in the area. The final results that I found is that the photos I used on my poster make connections to what is happening here in Buffalo, are also occurring nationally. Looking at the statistics and the photos used, housing is a problem in Buffalo. My conclusion is that the Buffalo area does need to change some things in regard to housing. On my poster, I have provided resources that are helpful for people who want to make a change in their community. Overall I hope that the project can help raise awareness for poverty and housing issues and will make people want to make a difference.

## The King of Kong Fist Full of Quarters & Free to Play: The Rise of E-Sports and Its Superstars

Ryan Guzman

Faculty Mentor: Professor Meg Knowles, Communication

I will compare the film *The King of Kong: Fist Full of Quarters* directed by Seth Gordon (2008) to *Free to Play* by Valve (2014). Both documentaries are centered on representations of competitors in the gaming world. The earlier film looks at a champion of Donkey Kong, challenged by a newcomer to the popular 1980s arcade game, while the latter centers on several professional Dota players in the E-sports community. The economics of pursuing a professional E-sports career creates complex challenges, as the commercialization of gaming has ballooned. With this research project, I will show the evolution of competition in gaming from the early days of video games to contemporary trends in E-sports, and how these are depicted in the documentary medium. The two films use unique stylistic approaches to capture the gaming community in different time periods. They also reflect changes in the games themselves, from simplistic visual designs to graphic masterpieces created from contemporary visualization tools. Finally, my research will assess how the two films chronicle our adoption of virtual athletes as heroic role models, replacing traditional sports heroes.

## The Queen of the Night: Villainess or Mother Scorned?

Jada Jeremiah

Faculty Mentor: Professor Carolyn Guzski, Music

During the final year of his life, 1791, Wolfgang Amadeus Mozart composed what would become one of the most renowned operas, *Die Zauberflöte* [The Magic Flute] at the request of his librettist, theatrical director, actor, and friend, Emanuel Schikaneder. At the time, both Mozart and Schikaneder were nearly destitute, and they viewed this Singspiel - a form of German light opera, typically with spoken dialogue, popular especially in the late 18th century-as a money-making venture. With its use of Italian theatrical practices, and many references to Freemasonry, as well as its connections to traditional European musical forms and aesthetics, *The Magic Flute* immediately found broad appeal among the Viennese audiences of its time. Another overarching theme that was meant to garner the interest of audiences seeking spiritual uplift in addition to pure entertainment was the frequent allusion to Enlightenment beliefs. Characters such as Sarastro and his priests embody the light: by contrast the Queen of the Night and her ladies are adorned in black, representing the antithesis of these principles. This is especially evident during her “Vengeance” aria, *Der Hölle Rache Kocht* [Hell’s Vengeance Boils In My Heart]. This aria, with its death-defying pitch range and tessitura, is a steep challenge for many sopranos to date, In my analysis of *Die Zauberflöte*, I hope to uncover the true nature of the iconic Queen of the Night and answer the question: Is she as evil as she seems?

## K-Pop Today vs. American 90’s Film: Study on Male Gaze

Faith Lake

Faculty Mentor: Professor Meg Knowles, Communication

In this study I will explore the 2020 documentary *Blackpink: Light Up the Sky*, directed by Carolina Suh, in relationship to the 1998 film *War Zone: Violence Against Women in the Streets*, by Director Maggie Hadleigh-West. The correlation between the two films is located in Laura Mulvey’s concept of the male gaze, which dominates women in visual culture, particularly in the media. *Blackpink: Light Up the Sky* is about a Korean pop girl-group and its rise to fame, and *War Zone* is a cinema vérité style documentary following a single woman around the streets of New York as she confronts men, in interview form with a camera crew following her, who cat call or inappropriately address women. I will research gender theory to illuminate how K-pop culture participates in a visual exploitation of women in the spotlight, and show how Hadleigh-West disrupts the gaze by directly confronting men on camera who find it suitable to treat women as objects. Studying the two contrasting documentary styles, within their timely eras of popular film styles, I will also dive deeper into how these messages are conveyed through the documentary medium. I will analyze how each film style exposes the motivating concepts presented by its director.

## Coverage of the Chernobyl Disaster in 1986 from American Perspective

Allison Logan

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

On April 26, 1986 a nuclear eruption rocked Europe. The accident generated a fire that released significant amounts of radioactive material into the environment. It was the worst nuclear disaster in history. Near the city of Pripyat, in what is now Ukraine, sits Chernobyl Nuclear Power Plant where reactor No. 4 was set for a safety test that ultimately led to a series of explosions. The blast was so powerful the 1,000 ton roof was ripped right off and a fireball illuminated the night sky. It would be weeks later in May when Soviet leader Mikhail Gorbachev spoke publicly for the first time about the incident, claiming the worst of what had occurred was over. During a radio address to the nation, American President Ronald Reagan condoned the USSR for its unwillingness to share details of the danger of the disaster. This paper analyzes the catastrophic Chernobyl disaster of 1986 and the effects of mass media coverage in America. For this project I will look at newspapers, audio interviews, and news reports from the American perspective to

provide evidence for the conclusion that information regarding the Chernobyl disaster released by media outlets impacted the already growing fear of nuclear power in America.

## Does Poverty Affect Food Insecurity in Buffalo?

**Emily Lonigan**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Through photo and literature research, the problem of poverty and food insecurity in the city of Buffalo reflects the growing overall poverty and food insecurity of the nation, systemic food insecurity and the public health issue of hunger. Using PhotoVoice as a framework for research, this project will reflect the same issues around food insecurity and hunger in the city of Buffalo. PhotoVoice is a participatory research method where individuals take photographs and put them into personal context in relation to a certain topic. Over a week, 50 pictures related to the topic of food insecurity were narrowed down to three photos that draw connections between my perspective and analysis of the topic of food insecurity as it pertains to the city of Buffalo. Through preliminary analysis of local and national statistics about food insecurity and hunger, these photos back up the claim that the trends in Buffalo match national trends on this issue. Many systemic changes are needed to alleviate this problem nationally and in the city of Buffalo, including governmental changes to requirements for assistance, community outreach, and the re-imagining of actual food budgets for assistance recipients. Included in this project are resources for those interested to get involved and to make real, necessary change to alleviate this growing issue.

## Making New Enemies: The American Government and Media as Combatants in the Iran-Iraq War

**Matthew Matsulavage**

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

The Iran-Iraq War of 1980-1988 has had devastating political and social consequences for the Persian Gulf region for decades. While the United States official foreign policy called for neutrality during the war, it is well documented that the US and its allies were intimately involved in the war. With this historical research project, I will demonstrate how the US government's supposed neutrality during the first four years of the conflict prolonged the conflict by alienating both combatants. I will also present how the American press's coverage of the war did not present a neutral stance, instead pushing Americans to support one side or the other, often mirroring the government's classified "favorite" at the time. A careful reading of declassified CIA and State Department documents reveals the United States fueled the conflict by providing clandestine support for both sides in an attempt to preserve a favorable position in the region over its cold war adversary, the Soviet Union. Through examination of newspaper articles, broadcast news transcripts, and contemporary journals I will show that the US media often selectively discussed information about the conflict in order to bolster the United States' image and sway public opinion to the side of one combatant over the other. The tendency of the American media and government to play both sides at various stages of the war often pushed Iran and Iraq to continue fighting; losing American support was viewed as an existential threat to their sovereignty which left them no other option but to fight. The US intelligence community and media were seemingly in agreement, the best outcome for the Iran-Iraq war was no outcome. Letting both sides exhaust each other while still receiving token support from the US was thought to be their best option when the security concerns of the Cold War were taken into account.

## I Just Want You to Know Who I Am

## Latisha Matthews

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question that I am posing is what does poverty, homelessness, and affordable housing look like in Buffalo. My background information comes from doing research and reading about this national issue. Nationally, homelessness, the lack of affordable housing, and the discrimination of finding affordable housing is a problem. In the United States there are an estimated total of 553,742 people that are homeless. I'm going to use photovoice to collect data and obtain information to see if homelessness is a growing crisis in Buffalo. Photovoice is a participatory research method where I went out into the community on different occasions to take over fifty pictures. I picked the best pictures for my poster and completed an analysis to help everyone understand from my perspective that homelessness is an issue to be concerned with here in Buffalo. My final conclusion is that our community and policy makers should be more concerned with providing a remedy to this local issue before we become the spotlight of a national concern. My overall intention of doing this research is to raise awareness on behalf of the individuals facing homelessness or an affordable housing crisis to be recognized. I want to see tax dollars used to create incentives for individuals struggling to keep their rent paid and keeping their homes out of foreclosure. Housing should be made more affordable to meet our living wages.

## Spiral Function and Its Application

### Fatima Mohamed

Faculty Mentor: Professor Hongliang "Jimmy" Xu, Mathematics

In mathematics, a two-dimensional spiral is a curve which emanates from a point, moving farther away as it revolves around the point. There are seven types of spirals: Archimedean spiral, Euler spiral, Fermat's spiral, spiral of Theodorus, hyperbolic spiral, golden spiral, and logarithmic spiral. Our research focus on the logarithmic spiral (most often found in nature) and its application in real life. We consider a problem of finding trajectories of 4 moving objects, which originally stationed at the corners of a square of length  $s$ , and move toward a neighboring object clockwise with a constant initial speed  $v$ . We (1) apply mathematical modeling techniques, utilizing objects' symmetry; (2) establish a system of first-order differential equations that involve the objects' positions  $(x(t), y(t))$ , where  $t$  is the time; (3) use computer software Mathematica to obtain logarithmic spirals as objects' trajectories. We further study these trajectories' geometric properties theoretically and computationally, such as polar slope angle, curvature, sector area, arc length, circle inversion, etc. and come up with more interesting findings. A plan to further investigate more general cases is under way. These cases involve (1) objects are moving on a rectangle instead of a square (thus no position symmetry), with same initial speed; (2) objects are moving on a rectangle with different initial speeds for each of the moving objects.

## Copland and Dickinson: A Posthumous Artistic Collaboration

### Julia Monteferrante

Faculty Mentor: Professor Carolyn Guzski, Music

With over 1,700 individual poems, Emily Dickinson's oeuvre masterfully expressed a broad range of topics central to the human experience including nature, love, and death. American composer Aaron Copland (1900-1990), was so deeply inspired that he was willing to explore a genre that was mostly new to his professional work: the song cycle. A song cycle is a collection of solo vocal songs with piano accompaniment that are meant to be performed as a complete work but in many cases can be performed separately. As a pianist, Copland studied multiple volumes of Dickinson's writings to compile the poems he would utilize in his cycle. Copland's *Twelve Poems of Emily Dickinson* (1950) explores the great poet's ideas

through the power of music itself. The cycle lacks recurring musical motives and embodies no overarching narrative, leading critics to believe that Copland chose the poems at random. This couldn't be farther from the truth: the poems were selected with extreme care. These twelve poems explore the topics that are prevalent in all of his post-war compositions, both vocal and instrumental. Copland pushes the boundaries of tonal music to bring these beautiful texts to life, while leaving them simple enough to comport with Dickinson's modest lifestyle. My analysis of these songs will reveal the purpose, meaning, and musical elements of Aaron Copland's Twelve songs of Emily Dickinson.

## Housing Poverty in Copiague

**Halle Moore**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What does poverty and housing look like in Copiague, New York? US Americans are struggling to stay housed because wages have not been growing significantly for decades while housing costs have soared. More than half a million US Americans are homeless, according to HUD, though of course counting people who are homeless accurately is close to Impossible. The situation is even worse for US Americans of color. To obtain data I am using a method called Photovoice. Throughout this method process, it starts with a literature review. Secondly, we will identify the research question. Third, I will be using the data analysis in the format of "SHOWeD". Which ultimately is depicting what I see, what is happening, the correlation to our lives, the purpose of its existence, and lastly what can we do about it. When bringing my research to a conclusion I intend to report my findings on a poster. At the time of preparing my abstract, I expect to see the relevance to my literature in comparison to my findings. When attending my poster, you can expect to see a great number of photos that will foster your mind to think about the poverty in Copiague alongside statistics. As a result, I hope to engage and raise community awareness about poverty and housing in Copiague.

## Symptoms of ADHD and Financial Behavior

**Mikaila Morgan**

Faculty Mentor: Professor Jill Norvilitis, Psychology

There is little research examining financial well-being among college students with ADHD, although work suggests that adults with ADHD are at increased risk for financial problems. This study follows up on a previous study (Norvilitis, Linn, & Merwin, 2019), which found that while there was no relationship between ADHD symptomatology and current or expected debt, there was a relationship between ADHD symptomatology and increased anxiety about money, debt, and financial wellbeing. This study examines if there are specific attitudes or behaviors present in students with ADHD symptomatology, such as gambling or impulse buying. The study is being completed through a survey given to college students attending SUNY Buffalo State. To date, there are 77 participants (59 women, 17 men, and 1 nonbinary). Preliminary analyses show that those with more symptoms of ADHS may be less confident in their ability to handle money ( $r = -.18$ ,  $p = .13$ ). Data are continuing to be collected, and more in-depth analyses will be presented at the conference. The results may highlight the opportunity for ways to prevent future financial concerns college students may face. The results may also help in predicting problems down the road, leading to more effective interventions.

## An Empirical Study of Factors that Impact COVID-19 Spread in New York State

**Elizabeth Nash**

Faculty Mentor: Professor Bruce Swan, Mathematics

The Coronavirus Disease 2019 (COVID-19) epidemic continues to cause an international public health emergency. It leads to the death of between two and four thousand people a day just in the United States alone. The world has been guided on what should be done to help combat COVID-19, such as getting vaccinated. This project is going to find the relationship between the COVID-19 cases as of February 17, 2022, and vaccine rates, specifically in New York State (NYS). Along with vaccines, this study will explore the relationship that COVID-19 cases have with other factors, such as gender and race. The data used for this research was received from the Center of Disease Control (CDC) website and these factors were used to see how they affected the mortality and infection rates. Linear Multiple Regression will be carried out using SPSS to test the significance between the data.

## **Problematic Attachment to Social Media & Digital Addiction: The Link Between Age and Gender**

**Kemea Parsons**

Faculty Mentor: Professor Anne Liao, Communication

Social media has affected our lives in various ways. Social media has been a tool used in ways to communicate with people around the world. Even though social media has created great opportunities it has also had a turbulent outcome on people's mental state. Digital addiction is a common issue that we have in today's society. Social media has now been a contribution to addiction because of the obsessive and impulsive effect it can have on someone's behavior. Millions of people use social media as a way to self-gratify, boost self-esteem, maintain self-worth, and portray a self-image. People also can use it to hide behind a persona and fake identity. People have become attached to having an online influence, and it can become problematic. This study gives an assessment of how gender and age can make a difference regarding who is more prone to being addicted to social media. I will analyze how social media can affect an individual's mental well-being and insecurities people may have because of social media. It will also determine why people who are a certain age and gender are more likely to use social media. The research conducted will show possible factors through a survey and through the framework of the attachment theory.

## **The Emergence of Heavy Metal Subgenres in 1980s New York State**

**Joseph Patti**

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

This project focuses on the emergence of heavy metal music subgenres throughout New York State in the 1980s. For decades prior to the 1980s, the term "heavy metal" had been coined to refer to numerous bands that decided to stray away from regular (and successful) rock and roll music, in favor of a heavier, faster, and more aggressive style of music. Bands like Black Sabbath, Led Zeppelin, and Deep Purple are considered the founders of the "heavy metal" genre, and they emerged in the 1960s and 1970s. These bands were defined by a certain sound that was easily distinguishable from previous bands, as they incorporated new elements into their recordings that appealed to many people around the world. Thrash metal bands like Anthrax and Nuclear Assault, and death metal bands like Cannibal Corpse and Suffocation, stormed onto the music scene in 1980s New York State, and were met with praise, as well as criticism. New York State had an especially influential impact on the new scene of metal subgenres that would emerge in the 1980s, as bands from all areas of the state, from the thriving scene in New York City to Upstate and

Western New York metal circles, took influence and ideas from these heavy metal pioneers and created new subgenres of their own. It is undeniable that the 1980s brought about a more unique side of the heavy metal genre that had never been heard before, for reasons including competition and cultural changes amongst youth musical circles. Lyrics also changed along with these new metal acts and was very controversial and often frowned upon by many people on a global scale. Regardless, New York State bands had a pivotal role in the new scene of heavy metal subgenres that came out of the 1980s and provided the blueprint for bands to continue to produce this type of music well after the 1980s came to a close, even into today.

## HVAC ASHRAE Design Competition

**James Purpura, Steven Baxter, Brad Schofield, and Jason Bolea**

Faculty Mentor: Professor Jikai Du, Engineering Technology

ASHRAE is a global society that was founded in 1894. As a company their mission is to use sustainable and efficient technology to better the well-being of humans. Every year ASHRAE holds a worldwide design competition in order to educate upcoming engineering students about work in the field of HVAC systems. Heating, ventilation, and air conditioning systems (HVAC) are an important part of any functioning building. The competition is composed of three parts. Our group will be participating in the HVAC design calculation portion. Our job for this competition is to calculate the heating and cooling loads in each room, hallways, and space for a two-story art building located in Sydney, Australia. The building is composed of visual arts, operating rooms, a student union, music rooms, and a parking lot. The task at hand will take into consideration the daily temperature, humidity, and deducing occupancy of each room at certain parts of the day. These factors, along with the ASHRAE standards, owners' requirements, and budgeting, will drive the team's decisions in both zoning plan and designing the HVAC unit. Our system will have a low life cycle cost and have a low negative environmental impact. It will also promote comfort and maintain health for its occupants with a creative high performance green design and seamless synergy with the architecture. The calculations will be developed using a program called HAP which was developed by Carrier Inc. Once the calculations are done, our group can zone the building properly and pick the correct equipment to be used to ventilate the building. The student projects will be recognized by ASHRAE at the 2023 ASHRAE Winter Meeting scheduled for February in Atlanta, Georgia.

## Aerobic Oxidative Deprotection of Hydrazones and Oximes by Mesoporous Manganese Oxides

**Bremmer Belisario and Anton Ruppert**

Faculty Mentor: Professor Sourav Biswas, Chemistry

The deprotection of organic functional group is a popular technique in multistep selective organic transformation. Traditionally, the deprotection reactions are performed using mineral acids and bases. There are few reported catalytic routes which involves the use of stoichiometric toxic oxidants and hazardous peroxides. Herein we used mesoporous manganese oxide nanomaterials for the deprotection of hydrazone and oxime derivatives to corresponding carbonyl functional groups using aerobic and mild reaction conditions. The materials are composed of nanoparticle aggregation with a mesoporous network. Both hydrazone and oxime derivatives are converted to corresponding carbonyl compounds with excellent selectivity. Mechanistic study revealed involvement of radical intermediates by electrons transfer to Mn centers followed by oxygen activation. Mild reaction conditions, absence of any acids and bases and use of air as the sole oxidant make our catalytic protocol attractive for deprotection chemistry.



## Russian National Identity and the Origins of the Ukrainian Conflict

David Schuler

Faculty Mentor: Professor Patrick McGovern, Political Science and Public Administration

Starting with Russia's annexation of Crimea in 2014 and continuing with the Russian invasion of Ukraine in 2022, questions have arisen concerning the motivations for Russia's aggressive foreign policy in Eastern Europe. This project focuses on the concept of a Russian national identity, or lack thereof, following the collapse of the Soviet Union in the late twentieth century. Recent research suggests a clear vacuum where a sense of Russian identity ought to be, particularly following the failure of a communist empire. This lack of identity and national purpose allowed Vladimir Putin to secure his leadership position of the Russia state and exploit the notion that Russia must become/remain a significant player in the international system. Putin's rise to power then may be understood in light of his carefully nurtured desire amongst the Russian people to remake the glory days of the Russian and Soviet Empires, thus leading to an aggressive Russian foreign policy towards Eastern Europe.

## Gordon Parks and the Black Experience

James Timothee

Faculty Mentor: Professor Meg Knowles, Communication

This paper will draw the reader into the lens of photographer Gordon Parks and situate him in the tradition of black photographers from slavery to present. I will examine the documentary films *A Choice of Weapons: Inspired by Gordon Parks* (2021), directed by John Maggio, and *Through a Lens Darkly: Black Photographers* (2014), directed by Thomas Allen Harris. Both films demonstrate the ways black photography impacted black culture over the last 150 years. In photographing the black experience, Gordon Parks shows us why he describes his camera as his "weapon of choice." Thomas Allen explores the role of photography in African American lives, and how photographs define the identity of black people. While both documentaries shine a light on black experience, the directors employ differing tactics of documentary construction and form to explain these stories. The project will investigate the impact of these directorial choices in documentary biography on our understanding of this visual history.

## Examining Immigrant vs. Native-Born Cause-Specific Mortality and Age at Death Patterns Between 1892-1897 in Forest Lawn Cemetery, Buffalo NY.

Ashley Weaver

Faculty Mentor: Professor Julie Wieczkowski, Anthropology

This research project analyzes data from scans of the Death Register Volumes D and E from Forest Lawn Cemetery in Buffalo NY to examine cause-specific mortality trends and mean age at death in immigrant and native-born populations from 1892-1897. While there have been studies on the topic, they all have used data on current immigrant populations, such as from Asia, Latin America, and the Caribbean. My research reflects an earlier immigrant population before a major shift in origin countries occurred after the Immigrant Act of 1965. I recorded name, place of birth, age at death, date of death, and cause of death of 250 individuals from each of the four different groups: immigrant women, native-born women, immigrant men, and native-born men. I matched for age for the cause of death analysis and categorized the causes of death into 9 major categories. Immigrant women (61.2 years) lived longer than native-born women (50.7 years), and immigrant men (59.5 years) lived longer than native-born men (47.7 years), supporting my hypothesis. Immigrants and native-borns differed in their causes of death. Native-born women were

disproportionately affected by infectious disease and debility, while immigrant women were disproportionately affected by intestinal causes of death. Native-born men died from injury disproportionately more than immigrant men. The other categories, for both sexes, had small margins of disparity. Both the age at death and the causes of death analyses illustrate that nativity (or immigration) played a role in mortality in those individuals buried in Forest Lawn between 1892 and 1897.

## The Bottom Line: Fast Fashion's Effect on the Earth and Those Who Inhabit It

Amanda Wenner, Martie Jones

Faculty Mentor: Professor Jane Sullivan, College Writing Program

To the detriment of the environment and the human psyche alike, Fast Fashion has become the leading method of producing mass amounts of low-quality, low-priced clothing at a staggering rate. While the accessibility of inexpensive "trendy" clothing is a blessing for some, it comes at the cost to the environment and the well-being of the laborers who produce it. This literature review intends to uncover the various impacts Fast Fashion has on (a) the environment, (b) the world economy, and (c) the self-image of many young people. Few attribute pollution, global warming, or low-self esteem to the fashion industry. Yet, overproduction of short-lived styles leads to the waste of money, material, and labor of many; and as the time between fashion cycles continues to shorten, those who wish to stay in style may contribute to poor consumer habits that negatively impact their own mental and financial health, as well as the environment. Yet, we also challenge whether it is the consumer or the manufacturer's job to make a shift in the market which promotes sustainable fashion. Our objective is to address the negative impacts Fast Fashion has on various aspects of our lives, as well as to offer solutions to some of the issues created by this industry. With prior IRB approval, we will interview first year college students in an urban four year public school to gain information about (a) their knowledge about Fast Fashion, (b) their use of Fast Fashion, and (c) their understanding of the environmental impact of their fashion decisions.

## The Moderating Role of Entrapment in the Relationship Between Risk Management & Suicide Ideation

Adrianus V. Wutz

Faculty Mentor: Professor Dwight Hennessy, Psychology

Suicide ideation (SI) is one of the most destructive symptoms of any mental disorder. Individuals that are afflicted by these symptoms are associated with feelings of entrapment and hopelessness in their day-to-day lives (Chang, 2017; Forkmann & Teismann, 2017). SI has been found to be developed in highly neurotic individuals, introducing the idea that SI can be linked to personality. However, research looking at risk management (RM) of SI tend to focus on deviant behavior, such as addiction (Ammerman et al., 2018). These studies seem to ignore the broader research in RM that has found relationships between an individual's social norms, personality, and childhood trauma in relation to their RM (Huh et al., 2016; Oehler & Wedlich, 2018; Wang et al., 2019). One of these personality factors might be entrapment, which represents the thoughts and perceptions that there is no escape out of a situation, which is usually felt for multiple months, even years (Gilbert & Allan, 1998). Previous research has shown that entrapment can be an independent predictor of SI (Forkmann & Teismann, 2017). Therefore, the central aim of this proposed study is to see if entrapment has a moderating role in the potential relationship between SI and domain-specific RM (e.g., decision making). This will be done through online self-reported questionnaires, which will ask participants about SI, entrapment, hopefulness, and RM levels. The predictions of the proposed study

will be that SI, entrapment, and hopefulness will predict certain RM choices. In addition, entrapment and hopefulness will interact with the relationship between SI and RM.

## Academically Addressing Poverty Through the Lens of Those Most Affected

Lawrencine Yarborough

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What does poverty and school districts look like in Buffalo? Throughout the country, in high poverty school areas, nearly all students are faced with barriers of some kind. Only 68% of 12th graders graduate due to the lack of sufficient academic knowledge because of their hurdles at home, including poverty, leaving their potential either unrecognized or unrealized. I used Photovoice, a research method that includes taking photographs, to help me answer my research question. I was able to collect photos of high poverty school areas in Buffalo. Six western NY school districts are settled in these severe poverty areas, with 36.5% of our youth living below the poverty line, causing high stress levels among those affected and toxic consequences for their brain development. These findings may also bring together other conditions that low performing students face due to the lack of commitment in their community and social environment. I hope to raise awareness in the community about districts with less resources as that may hinder students from getting the satisfactory academic support with my research. As more people become aware of this problem and involved in trying to fix it, students attending school in high poverty areas will benefit.

## Redlining in the City of Buffalo

Jah'Quira Young

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is how has Redlining impacted African Americans in the Buffalo area? Redlining occurred in certain areas of communities where banks labeled certain areas of cities as high risk because of the amount of African Americans that are located in the area. They refused to approve loans for mortgages in these areas. Not many minorities had the ability to buy homes because of redlining and racism in the real estate industry across the country. African Americans gaining the ability to buy a home is seen as a luxury that only the rich can afford. I used Photovoice to determine if redlining happened in Buffalo, New York. I took pictures of different areas of the city of Buffalo. The results of redlining can be seen in different sections of the city of Buffalo. This is because banks put caution signs on certain parts of the city where they deemed it to be mixed races or too many African Americans, including the East Side of Buffalo. People could not get loans to purchase homes in these areas. As a community we need to bring awareness to how this is negatively impacting African Americans. The goal of my research poster is to begin to do this.

## There's Nothing Cooking in Buffalo

Hussian Ali

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

Something that sparked my curiosity while reading the "Hunger in America" is what does poverty and hunger look like in Buffalo? In the United States there are several programs such as WIC. Even with these assistance programs, many families nationwide are suffering from hunger. The method I used to help answer this question is Photo voice. Photo voice is the method used by health promotion researchers to

advocate for positive social changes through photographs. The photos I took illustrate that poverty and hunger is a problem in Buffalo. About 40% of Buffalo residents live below the poverty line which aligns with national data about 13.4% of the US national population lives below the poverty line which is estimated to be about 37.25 million people as of 2020. In this project my intentions are to show how widespread poverty is throughout the entire city to the extent that you can see it no matter what part of the city you go to. I'm hoping to bring some attention to this forgotten issue of hunger which is happening as we speak to so many elders, children, and families.

## Rachmaninoff's Radiant Russian Rhapsody

**Thomas Arnone**

Faculty Mentor: Professor Carolyn Guzski, Music

Very few musical works capture the unbelievable contrast as well as surreal climax in Sergei Rachmaninoff's Rhapsody on a Theme of Paganini op. 43. Being in the concerto genre, which is a musical composition for instruments in which a solo instrument is set off against an orchestral ensemble, the famous and renowned pianist and composer Sergei Rachmaninoff (04/01/1873-03/28/1943) showcases a wondrous expression of this genre with structure in a theme and variations rather than a multi-movement format. Rachmaninoff played the world premiere of his new composition on November 7, 1934 with The Philadelphia Orchestra on the stage of the Lyric Opera House in Baltimore. A child of 19th-century Tsarist Russia, Rachmaninoff composed in a Romantic style rather than adopting the Modernist principles of the 20th-century aged he lived in as American émigré after the Russian Revolution. Being an adaptation of the Italian virtuoso violinist and composer, Niccolò Paganini, there are specific as well as fascinating relationships, similarities, differences, and discoveries found within both Rachmaninoff and Paganini's works. This Rhapsody features 24 variations, yet has an immediately audible story-telling quality and atmosphere by having speaking-like melodies and more. Familiar from films such as *Somewhere In Time*, *The Story of Three Loves*, and *Groundhog Day* and even extending to narrative ballets performed worldwide, the Rhapsody was and is well-perceived. In my analysis, I will highlight key moments of contrast and mood within the Rhapsody by focusing on Variation 18, which truly shows the Romantic strengths of Rachmaninoff's music and the authenticity of the period even though this work was developed in the Modern period. I will also show the relationship to Niccolò Paganini's 24 Caprices. Furthermore, this presentation will capture how and why this rhapsody is widely regarded as one of Rachmaninoff's most enduring and frequently performed contributions to music as a whole.

## The Promise of Basketball in Urban Communities

**Darrell Barley**

Faculty Mentor: Professor Meg Knowles, Communication

The goal of this project is to explore the representation of basketball in urban communities in documentary films. I will be comparing and contrasting two observational documentaries. The first is Jonathan Hock's 2005 film, *Through the Fire*. This documentary takes place in Coney Island, New York and follows Sebastian Telfair, an athletic prodigy struggling to decide between becoming a professional basketball player or going to college. *Through the Fire* reveals Sebastian's many hardships and accomplishments. The second documentary is the classic film *Hoop Dreams* (Steve James, 1988), which takes place in the 1980s in the rough streets of Chicago. This documentary addresses the daily life of William Gates and Arthur Agee, two talented young players who have big dreams of becoming professional basketball players, despite coming from poverty and broken homes. This research project will analyze how the films depict class issues faced by urban youth in America, and the authenticity of opportunities

basketball seems to present to them. Basketball has been looked upon as a solution to better the socio-economic status of young black athletes. Research has shown that basketball promises the opportunity of socio-economic upward mobility but does not always deliver.

## Understanding Depressive Symptomatology Across Cultures: The Role of Self-Stigma and Help-Seeking Barriers

Olivia Bell, Francesca Giaquinto, and Connor Rohan

Faculty Mentor: Professor Pamela Schuetze, Psychology

Mental health stigma is a common deterrent to individuals receiving services or support for psychological disorders. The present study examines the relationship between mental health self-stigma and help-seeking attitudes, along with the subsequent correlation with depression symptomatology in minority cultures. Mental health stigma has been defined as negative stereotypes that are adopted by communities to define mental illness, while help-seeking behavior is when one seeks professional help for symptoms associated with a mental illness. Prior research has found notable differences in perceptions regarding mental health cross-culturally. In a cross-cultural mental health stigma analysis, negative community views regarding mental health led to negative help-seeking attitudes. When an individual experiences both self-stigma and racial stigma, this is referred to as "double stigma," which is associated with decreased help-seeking, even when the individual is coping with a mental disorder. The compounding barriers to treatment and associated outcomes within minority populations have not been fully explored. We hypothesize that mental health self-stigma and negative help-seeking attitudes mediate the relationship between minority cultures and depression symptomatology. Survey data is being collected at Buffalo State College via Qualtrics, which is an urban college campus where we expect a diverse sample that will allow us to address cultural differences. Participants are asked to initially provide basic demographic information such as gender and race. The Center for Epidemiological Studies Depression Scale was included to assess for depressive symptoms. The Internalized Stigma of Mental Illness Scale and the Self-Stigma of Mental Illness Scale were included to assess self-stigma and the Self-Stigma of Seeking Help Scale was included to assess help-seeking barriers. Data collection is ongoing in the current study. Analyses will be conducted prior to the conference. Upon conclusion of data collection, a mediation model using the PROCESS macro in SPSS will be used to analyze our data.

## Homelessness Defined by Lack of Housing

Brianni Bennett

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

The question that is being posed is, "what does lack of housing and homelessness look like in Buffalo?". Within the United States, there are many Americans struggling with excessive housing fees like paying rent, mortgages or even electric bills. They are subjected to choosing between everyday necessities or residency. Though there are organizations which support global housing issues, a lot of Americans are homeless and on the verge of poverty. By using photo voice, this allows me to take this topic and gain insight into statistical aspects of housing issues within Buffalo. To further my research I plan on taking photos around Buffalo to prove that they support the local statistics, and about the issue as a whole. From this, I expect to find areas experiencing housing issues in Buffalo with similarities to those of other countries. Furthermore, I expect to find whether there are organizations in Buffalo which support Americans struggling with housing issues. With these statistics, hopefully pull attention to the issue of housing and homelessness that may not be globally recognized. I hope to raise awareness through this research project and give people information about how they can get involved.

# Cyberbrain Space: From 1980s America and Japan to Global Phenomenon

**Alexandra Bond**

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

In the early 1980s, science fiction literature in America was turning away from the New Wave movement that had defined the genre in the 1960s and 1970s. At the same time, Japan in the 1980s saw cyberpunk films and manga emerge from the rising punk music subculture. Both genres focus on dystopian capitalistic hellscape and increasing dependence on technology: how these might tear away at a person's self-identity, and how the fringes of society might disproportionately suffer. Both genres are, in modern scholarship, referred to as "cyberpunk." This project will examine the origins of both cyberpunk scenes. I will outline the circumstances that formed the foundation of both Japanese and American cyberpunk and demonstrate how creators in these genres addressed similar anxieties with different cultural perspectives. Finally, I will examine how the Japanese translation of *Neuromancer* by Hisashi Kuroma and the English-language distribution of *Akira* by Streamline Pictures in the late 1980s influenced the subgenres of the countries they were introduced to, paving the way for a global cyberpunk. My poster will visualize the concurrent timelines of cyberpunk in America and Japan, providing visual reference for how works from each scene influenced subsequent works, and how the two subgenres merged into the 1990s and beyond.

# What Does Poverty and Transport Look Like in the City of Buffalo?

**Shaniya Boyd**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

When reading the book "Broke in America" by Joanne Goldblum and Colleen Shaddox, the topic of transportation intrigued me. There is an extraordinary number of connections between the systems of transportation and poverty not only in Buffalo but all around the country. Since I am now living in Buffalo, it interests me to see how this issue affects the dynamics of poverty in my area. "But in much of the United States, public transit is seen as the way poor folks get around—and so investments in it fall far short of what's needed to provide reliable, convenient service." This quote was the reason my topic stood out to me because transportation might seem like a general need for some but for others it is a luxury due to how much their life revolves around it. To obtain information for my project I will be using the Photovoice method. The purpose of PhotoVoice is directed to making a social change towards issues captured in photos based in an individual's community / visiting area. Based on using the photos I have from the Photovoice and other research, I expect the connection between transportation and poverty to be shown in the Buffalo area. Considering the generalization of this issue around the country I anticipated being able to see how this issue affects poverty easily. However, upon completing the project I expect it to have been slightly more difficult in exemplifying the correlation of poverty and transport because although issues are prevalent in society it is not always easy to see them first-hand. Nevertheless, I expect to find research and pictures that show how Buffalo can possibly improve poverty with fixing transportation throughout the City in various ways. In terms of my project raising awareness, I hope that people in the community see how much transportation can affect the structure of society causing or worsening poverty. While knowing how essential transport is, I hope to open eyes on why and how issues within transportation in Buffalo should be fixed.

# Multicomponent Caloric Materials for Refrigeration

**Jacob Casey, Chris Hanley, Joseph O'Connell, Noah Kramer, and Cora Kubik,**

Faculty Mentor: Professor Arjun Pathak, Physics

The magnetocaloric effect (MCE) is a relationship between the thermodynamic and magnetic properties of materials where the application or removal of an external magnetic field changes the temperature of the material. Researching this phenomenon could lead to a revolution in technology and reduce the cost of energy in certain industries such as refrigeration or climate control [Zhang et al., Appl. Phys. Lett. 105 242403 (2014)]. One of the common goals in this research is to develop cheaper, durable, earth-abundant materials which exhibit a large MCE at a relatively lower magnetic field strength. Magnetocaloric materials-based refrigeration units are promising candidates due to their cooling efficiency, environmental friendliness, reliability, portability, cost-effectiveness, and long cyclic operation stability. Among such materials, a family of  $MnTX$  ( $T = Ni, Co$ ;  $X = p$ -block elements) compounds have received considerable attention due to their potential applications [Pathak et al. Applied Physics Letters 90 (26), 262504 (2007)]. In this presentation, we discuss the synthesis and characterization of  $MnTX$ -based multi-component materials that exhibit a coupled structural and magnetic phase transition around room temperature. We have studied a partial substitution of Fe with Ni on the structural, magnetic, and magnetocaloric properties of a series of  $Mn_{0.5}Fe_{0.5-x}Ni_{1+x}Si_{0.94}Al_{0.06}$  compounds. For all values of  $x$ , the materials exhibited a first-order magneto-structural phase transition from a low-temperature ferromagnetic orthorhombic phase to a high-temperature paramagnetic hexagonal phase. The transitions were accompanied by large magnetocaloric effects. The maximum magnetic entropy changes of  $-22 \text{ J kg}^{-1}\text{K}^{-1}$  and  $-57 \text{ J kg}^{-1}\text{K}^{-1}$  for field changes of 2 T and 5 T, respectively, have been realized for  $x = 0.1$  at  $T = 322 \text{ K}$ . The large magnetocaloric effect associated with the system's constituent cheap and non-toxic elements make it a potential candidate for application as a magnetic refrigerant.

## Poverty, Property, and Foreclosures: Buffalo, NY

Dante Cracchiola

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What causes someone to get evicted, or foreclose on a house? In the fourth quarter of 2021, there was over 55 thousand foreclosures across the US, 82% higher than the number of foreclosures in the fourth quarter of 2020, but why, and what does this look like here, in Buffalo? How does it compare to the rest of the US? In order for me to find a trend among the foreclosures, here, in Buffalo NY, I will be utilizing the PhotoVoice research method. By going out into the city and observing the hundreds of foreclosed houses around Buffalo, therefore I can create a narrative about what may be the driving factor behind the mass foreclosures. Buffalo has a very diverse population, and also is one of the poorest cities in America, which results in a lot of working-class citizens, who rely on their hands to put food on their table each day. Also, with the pandemic, a lot of workers were laid off or were put out of work for some outside reason, which could play a major factor in the massive rise in foreclosures across the US. My overall intention of this project will be to create a photo-voice narrative of people who have foreclosed on a house, which may result them in being homeless.

## Spatial Analysis of New Potential Drug and Needle Disposal Sites

Ryann Dubel

Faculty Mentor: Professor Tao Tang, Geography and Planning

There is a possibility that there are many correlations between disposal sights for drugs and human interactions that happen in the Buffalo, New York area. These disposal sites are placed strategically in order to give communities a safe place to dispose of used needles, and drugs that allow for these things not to get into the wrong hands. Used needles being taken off the streets will lower accidental pricks of said needles that could be carrying disease or drugs. With the drugs being disposed of, illegal drugs are not always the

ones that need to be disposed of; it could be the disposal of old medication that is outdated, or not needed anymore. This disposal is needed to keep the communities safe. Diseases and virus's that are transferred by bodily fluids needles give a higher chance of contracting these things when used needles are around. A more well-known virus that could illustrate these correlations between disposal sights and new infections is HIV that is very well documented due to its severity. There are other examples that could be tested for correlations to disposal sites like accidental drug overdoses of prescribed medications, drug overdose from getting pricked by used needles, and more. With these possible occurrences from having drugs and used needles it is important to see where new disposal sites are needed from analyzing the data.

## Supportive Practices for Preschool Students Entering Kindergarten in 2021

Sofia Fanizzi

Faculty Mentor: Professor Kathleen Dust, Elementary Education, Literacy, & Educational Leadership

Does kindergarten entrance look different in a mid/post pandemic world? This research is to better understand how changes due to the Covid-19 pandemic have affected preparedness for kindergarten. This research project observed students age-eligible for the town's central school district kindergarten program who attended the preschool classrooms at a community childcare center. The results are based on observations and organic interactions with the classrooms and preschoolers along with questions asked of the teachers and parents. The main focus of the work is looking at what is happening in preschool classrooms to bridge the expected gap between preschool and kindergarten due to the pandemic. The preschool work, observation, and observed assessments show that most of the children are prepared for kindergarten entrance. The study also concludes that a balance is needed between high academic experience, experimental opportunities, and play. In looking at the pandemic crosswalk, the preschool changes have been minimal.

## Knight Rider: Reflecting Fears and Anxieties on the American Small Screen During the 1980s

Michael Fisher

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

In the 60s cinema entered what critics refer to as the golden age of American Western media. With films such as *A Fistful of Dollars*, *For a Few Dollars More*, *The Good the Bad and the Ugly* and *Once Upon a Time in the West* all being released to critical praise during this period. The western genre would be greatly influenced by these films in particular the mold of the male lead created by these films. "The Man with No Name" portrayed by Clint Eastwood in *A Fistful of Dollars*, *For a Few Dollars More* and *The Good the Bad and the Ugly*. Along with "Harmonica" played by Charles Bronson in *Once Upon a Time in the West*. The lead was traditionally portrayed as the following: A handsome man who's name and past are unknown, a man who despite a callous, and at times misanthropic personality, still fights for justice. *Knight Rider* was a show about a man without a name. Betrayed and left for dead the man is given a new identity as Michael Knight, a crusader for justice, fighting those who would place themselves above the law. At first glance this show seems simple enough but when observed through a more discerning lens the deeper themes of the show are laid open for the viewer. The lens of western genre is vital in understanding how *Knight Rider* was a reflection of the time. By observing where the show breaks from tradition the deeper anxieties of the time are revealed. Through close analysis of the TV series this research demonstrates similarities and differences between *Knight Rider* and a traditional western, this includes musical styles, technological and criminal anxieties and questions about the role of government. In conclusion this study will highlight popular fears and anxieties of the 80s.



## The Links Between Nike and Jordans to Cultural Identity

Dante Fung

Faculty Mentor: Professor Bridget Chesterton, History and Social Studies Education

In 1984 Nike took a chance on an unproven NBA Rookie and decision changed the trajectory of footwear to this day. This partnership would revolutionize the sneaker world and etch its place in not only American culture but globally. From popular advertising campaigns to clever marketing strategies Nike footwear became a cultural phenomenon. Nike sold the belief that through buying and wearing their sneakers that you could be “Like Mike” and emulate his supernatural performances on the hardwood. This led to many buying into the hype and scrounging up whatever funds they could to be “Like Mike”. Prior to the signing of Jordan, Adidas and Converse dominated the sneaker market while Nike was not a major player and struggling to stay afloat. Within the first year of sales the Air Jordan 1 grossed \$100 million in sales, and following this Nike began to expand their influence along with targeting different audiences. What initially drew in consumers was that Nike made basketball shoes that were now fashionable and that could be worn for purposes other than the sport. Like that streetwear culture became permanently linked with Nike’s sneakers. This is because with every new release Nike implement newer innovative designs/technology opposed to the stagnant and archaic methods of their rivals. Nike appealed to the masses to the point coast to coast, state to state, everyone everywhere was rocking the swoosh. However, nothing had a bigger influence on the expansion of Nike other than hip hop which soon made Nike the go-to sneaker in urban cities across the country. This presentation will show the impact of Nike and Jordan sneakers on identity and American culture. I will achieve this by dissecting Nike’s numerous ad campaigns, Jordan’s commercials with Spike Lee, and articles from the 1980s which documented the meteoric rise of sneaker culture.

## Synthesis and Characterization of Magnetic Topological Quantum Materials

Christopher Hanley, Jacob Casey, Chris Burgio, Joseph O’Connell, Randall Filippone, and Noah Kramer

Faculty Mentor: Professor Arjun Pathak, Physics

The magnetic topological quantum materials that contain rare earth (RE) atoms are very interesting for both fundamental study and application perspectives in spintronic devices. The physical properties of these materials are distinct from common metals and alloys and have emerged as an extraordinarily prolific ground of materials science research for high efficiency electronic and quantum-phenomena-based devices. One of the examples is kagome materials which become an interesting platform to study the interplay among symmetry, magnetism, topology, and electron correlation. The latest works in  $\text{REMn}_6\text{Sn}_6$  have illustrated that this family could be fascinating to investigate various physical phenomena due to large spin-orbit coupling and strong magnetic ordering [Phy. Rev. B, (Letter) 104, L161115 (2021)]. However, high-quality single-crystalline samples are still limited, and detailed study of magnetism and electrical transport is also lacking. Therefore, the understanding of fundamental science and thereby the design of the materials for future quantum computation applications is limited. In the last two years, we have been working on the synthesis of various high-quality single-crystalline magnetic topological materials and investigating their details of magnetic and electronic properties. As an example, in this presentation, we focus on the synthesis of single-crystalline  $\text{REMn}_6\text{Sn}_6$  (RE = Er, Ho) materials. We also discuss the magnetic and transport phenomena at various temperatures, magnetic fields, and applied pressure.

## Closed Mouths Don’t Get Fed

## Kayla Innocent

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

My research question is, how do Buffalo residents access food assistance programs? I'm curious to see how these programs are doing in Buffalo. Nearly forty-seven percent of people in Buffalo collect food stamps. Across the United States, many families struggling with poverty rely on food assistance programs such as the Supplemental Nutrition Assistance Program (SNAP). SNAP is an essential part to keep millions of Americans healthy. Many individuals lack adequate knowledge of the distribution of SNAP benefits. SNAP recipient receives benefits monthly, recipients do not receive a one-time payment. Photovoice will be my method of collecting data. Photovoice is participatory research advocacy and a call to action. I will be showing a real-life account of the process of obtaining food stamps. My poster will include information about how many people in Buffalo and Erie County receive food stamps and the process they must go through to access this program. I intend to let people know that it's okay to ask for assistance and seek assistance. In addition to bringing awareness to the issue of poverty and food in Buffalo on my Research Poster, I will also include local resources that someone in poverty could go to get help with food assistance.

## Childhood Drama: Leonard Bernstein's I Hate Music

### Christina King

Faculty Mentor: Professor Carolyn Guzski, Music

Inspired by the works of composers such as Gustav Mahler and Charles Ives, Leonard Bernstein (1918-1990) was one of the best, and most well-known American composers of the 20th Century. He composed the charming song cycle, *I Hate Music*, which consists of five brief songs sung from the animated perspective of a 10-year-old girl. The cycle (a *Liederkreis* in German) was written in 1943 specifically for the voice of American mezzo-soprano Jennie Tourel, who first premiered it to conclude her New York recital debut at the end of her program. Bernstein chose Miss Tourel for this cycle because these five songs were composed for the voice of a female adult vocalist performing in a child-like manner. Bernstein even wrote specific directives that were published in the musical: "In the performance of these songs, coyness is to be assiduously avoided. The natural, unforced sweetness of child expressions can never be successfully gilded ..." What is so unique about *I Hate Music*, is that it is one of his least-known pieces that includes primarily conjunct melodies as well as tonal and diatonic harmonies. With these "children's" songs, the performer has a lot of elbow room to incorporate as much musical expression as possible. In my performance practice, I hope to convey this musical expression and why he chose to give it a child-like feel.

## Phase Transition and Magnetocaloric Properties of La-Fe-Si Based Alloys

Noah Kramer, Cora Kubiak, Jacob Casey, Joseph O'Connell, and Chris Hanley,

Faculty Mentor: Professor Arjun Pathak, Physics

Materials responding strongly to minor variations of external stimuli could revolutionize many of the energy technologies, including magnetic refrigeration, actuation, and sensing. The commercialization of this technology is crucially dependent on the development of suitable magnetic materials that exhibit large magnetocaloric effects (MCE), a phenomenon that causes the cooling or heating of material when placed in an external magnetic field. Giant magnetocaloric effects arise from first-order magnetic phase transformations (FOPTs), hence significant hysteresis and poor thermal transport remain two materials-related basic science challenges that impede the transitioning of the magnetocaloric cooling technologies to the market. Considering the natural abundance of the constituting elements, LaFe<sub>13</sub>Si<sub>6</sub>-derived compounds are among the most promising materials for energy applications [Fujieda et al. *Appl. Phys. Lett.* 79, 653 (2001)]. They are, however, extremely brittle and mechanically friable, showing rather low thermal

conductivities and measurable irreversibilities, which thus far could not be eliminated completely. Recently, Pathak et. al [Pathak et al. *Acta Materialia* 215, 117083 (2021)] reported the first-time discovery of a two-phase, naturally formed at the LaFe<sub>2</sub>Si stoichiometry rather than LaFe<sub>13</sub>Si<sub>6</sub> compound, which has been studied over two decades. LaFe<sub>2</sub>Si exhibits strongly responsive behaviors without the degradation in properties that can be exploited in weak magnetic fields. However, the functional properties happen rather at low temperatures (below 200K). We are working on this material to further enhance the phase transition temperature and also improve the magnetism of the alloy. In this presentation, we will present the synthesis and characterization of LaFe<sub>2</sub>-yCo<sub>y</sub>Si. We have prepared LaFe<sub>2</sub>-yCo<sub>y</sub>Si by making the first pre-alloy of FeCoSi and then added Co and melted several times. The alloys were further homogenized by vacuum suction casting, which prepared 4 to 5 cm long rod with 6mm diameter of sample. The alloy was further sealed into the quartz crucible in the vacuum and heat-treated at 1050°C for 158 hours, then quenched into water. In this presentation, we discuss the phase transition, magnetic and magnetocaloric properties of both LaFe<sub>2</sub>Si and LaFe<sub>2</sub>-yX<sub>y</sub>Si compounds.

## Financial Perceptions among College Students

Abigail Kruse, Mikaila Morgan, and Diana Nguyen

Faculty Mentor: Professor Naomi McKay, Psychology

Low socioeconomic status (SES) has been associated with higher levels of anxiety. There was a high prevalence of anxiety in females, the age group of 9-12 years old, and those of lower socioeconomic status. Low SES also corresponds with changes to the physiological stress response. Chronically higher levels of cortisol have been found in children and adolescents in families with low socioeconomic status. It has also been found that higher perceived social support buffers the stress caused by low SES. However, little is known about the relationship between SES, stress, and financial concern of college students. The current study will fill in this gap in the literature by identifying if SES and chronic stress are also related to financial burdens. The inclusion requirements for the participants include being at least 18 years old or older. Participants will be asked to complete an online survey through Qualtrics. Upon the start of the survey, the informed consent form will appear, asking the participant if they consent to the proceeding questionnaires, as well as detailing all inclusion and exclusion criteria. Once consent for participation is obtained, participants will complete the survey which includes questionnaires on demographic information, socioeconomic status, financial self-confidence, financial social comparison, financial well-being, financial strains behaviors, and chronic stress. We predict that there will be a negative correlation between SES and chronic stress or financial strain behaviors among college students. We also expect to see a positive correlation between SES and financial self-confidence, financial well-being, or financial social comparison.

## When Social Media Magnifies Women's Trauma

Joana Leamon

Faculty Mentor: Professor Meg Knowles, Communication

Social Media magnifies and multiplies the trauma of sexual exploitation of women. Published research shows that social media makes it excruciatingly hard for sexual assault victims to recover from their trauma since, with the invention of smart phones, the assault event is increasingly video recorded and posted online. Technology makes victim blaming and shaming nearly impossible to escape. As traumatic, this same technology can create a convincing, but false and slanderous, backstory used against anyone by anyone with modest internet skills and a desire to wreak havoc on another person. After nearly 30 years of the internet's global availability, societies are still learning about its transformative power for better and worse, as for the first time in human history, personal and intimate information, accusation, and trauma can

become global and permanent. This research paper will compare and contrast two documentaries: *Netizens* (2018) directed by Cynthia Lowen; and *Audrie and Daisy* (2016) directed by Bonni Cohen and Jon Shenk. While *Audrie and Daisy* illustrates the crushing effect of social media harassment on victims of sexual assault, *Netizens* investigates tactics for fighting back against harassment by harnessing social media to retaliate against aggressors. Both documentaries use media, including social media, to expose the raw truth of women's trauma. This truth is often tucked just under the pleasant veneer of our culture, from small town Marysville to metropolitan New York.

## The Ethical Questions of Documentary

**Sean Mahaney**

Faculty Mentor: Professor Meg Knowles, Communication

The 2021 documentary *The Rescue*, directed and produced by Elizabeth Chai Vasarhelyi and Jimmy Chin, chronicles the 2018 rescue of a Thai Soccer team and their young coach from the flooded Tham Luan caves. This research project will explore the challenges the filmmakers faced in producing the film and depicting the story of the events several years after they occurred. Since the soccer team had previously sold their story to Netflix, the National Geographic documentary team led by Chai and Chin had to rely on the testimony of other sources. There was resistance from the Thai government to cooperating with the filmmakers as well. There was additionally a lack of footage of the actual rescue, so the team was forced to come up with alternative ways to tell the story visually, including recreating footage of the diving teams who flew in from around the globe to participate in the rescue. The fundamental ethical question of who should own a story will be explored as well as telling a story that is incomplete and with limited perspectives. My thesis is that a documentary should honor the source material of all stories or should not be made at all.

## All Humans Deserve Adequate Housing

**Nina Miles**

Faculty Mentor: Professor Jessica M. Fitzpatrick, Social Work

As I have been researching more in depth about various factors that can result in a housing crisis across the US, I was left wondering how prevalent is the housing crisis here locally in Buffalo, NY? Millions of Americans nationwide are experiencing a housing crisis for numerous reasons. As a result, many are forced to make uncomfortable decisions regarding their living situation that may be detrimental to their own health and safety. As a way of assessing what the housing crisis looks like firsthand, I went into the community and conducted the PhotoVoice assessment, which entails you to capture raw footage that exemplifies poverty in your community. During the Photovoice assessment, my main focus remained on inadequate housing. After I took roughly 100 photos, I chose to display the three photos on my poster that I felt best portrayed the housing crisis in Buffalo. My results yielded that Buffalo does in fact have a housing crisis on its hands and the conditions vary depending on the area of the city. I feel as though my experience through this research speaks volume about how prevalent inadequate housing is here in not only Buffalo, but nationally as well. My intention behind this research is to bring awareness to this issue and to guide anyone experiencing a housing crisis firsthand to the proper resources to provide them assistance.

## Water and Buffalo. How Has It Effected our Citizens?

**Kaelie Pabon**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

For my poster I will be focusing on how Buffalo has taken care of their water quality, and infrastructures supplying it. After viewing literature on how this is a problem nationwide, for cities such as Flint, MI, where their water was contaminated from the years of 2014-2019 or in Newark where they're facing the same issues with old lead pipes, I became interested in what the city is doing to support clean water for citizens of Buffalo. My approach to this subject will be a photovoice. This consists of photos taken in Buffalo that show water infrastructures and such things pertaining to the quality of it. Questions answered with these photos will be; what's happening, how they affect our lives, why the situation exists, and what we can do about it. The photos and my analysis will show that what is happening around the country is happening in Buffalo as well. Overall I'm hoping to expose any major issues that may need to be dealt with when it comes to water quality in Buffalo. Whether it's unsafe chemicals in our water, or outdated lead pipes that need to be replaced in our systems, citizens should be informed of what's in the water they drink, bathe, and cook with. Research included local information, three sources to help citizens who are struggling with water quality, and information from the Buffalo Niagara Waterkeeper organization who help monitor, protect, and restore waterways in Buffalo.

## The Effect of a Literacy Professional Development on Different Stakeholders

**Klihtoo Paw**

Faculty Mentor: Professor Selenid Gonzalez-Frey, Elementary Education, Literacy, & Educational Leadership

The study describes the effect of a literacy professional development (PD) presentation on participants. The purpose of the current study is to learn about the effectiveness of the PD via participant feedback to improve future PDs on the topic. The literacy presentation was about the theories and instructional practices related to learning to read, specifically orthographic mapping. The session was virtual and attended by teacher candidates, teachers, and university faculty. After the session, participants were surveyed on their learnings, next steps, and opinions. The results showed that 100% of participants learned more about orthographic mapping and teaching reading. Eighty-six percent expressed an interest in PDS to learn more about practical applications.

## Acetaminophen Drug Tablet Analysis Using Chemometrics and Raman Spectroscopy

**Meghan Protzman**

Faculty Mentor: Professor Jinseok Heo, Chemistry

Counterfeit drugs have raised concerns throughout the world because of their threat to public health and their economic impact on the pharmaceutical industry. Raman spectroscopy is a non-destructive method to identify an unknown compound using a vibrational spectrum of Raman scattering signals resulting from the interaction of laser light with molecular vibrations of a compound. It can examine a variety of pharmaceutical samples irrespective of color and transparency in a diverse range of media. Raman spectroscopy can be adopted for rapid field tests to discover counterfeits because of the minimal sample preparation and the availability of a hand-held device. The use of Raman spectroscopy with chemometric analysis has been well documented as an effective method for the identification of counterfeit pharmaceutical products. Due to ongoing concern about the lack of transparency surrounding the manufacturing of generic pharmaceuticals in the US, this project aimed to examine the utility of the method for the differentiation of generic pharmaceuticals. A test pool of seven brands of acetaminophen was obtained, and representative tablets were characterized by Raman spectroscopy. Two brands were determined to contain a titanium dioxide (TiO<sub>2</sub>) coating, allowing for simple differentiation. The Raman

spectra of brands in which TiO<sub>2</sub> was not observed were analyzed using Principal Component Analysis (PCA) to examine the unique variance present in each brand. This revealed discrete groupings of five of the seven brands. The project provides a proof of concept for the differentiation of fake drugs from genuine drugs by Raman spectroscopy and chemometrics and has the potential for the method to be used for the classification and prediction of products.

## Homeless in Buffalo, NY

**Jeanatta Purdie**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What is life like being homeless in Buffalo, NY? Being homeless in America is a massive problem as a whole. There is not just one person to blame for this issue of homelessness, the homeless and how huge of a problem it has always been. I will be comparing homelessness in Buffalo, NY today to chapter 4 of *Broke in America*. In the chapter of *Broke in America* it discusses how the cost of housing is increasing, not enough effort being put into housing issues opposed to different streams of funding. The photovoice I am choosing to do for this research paper includes what being homeless in Buffalo, NY looks like in comparison to the book *Broke in America*, chapter 4. The photos I have taken are from the community of Buffalo today and show the growing issue of being homeless in Buffalo. My research found that homelessness is also a massive problem in the community of Buffalo. There is an increasing number of women in Buffalo living in shelters as of January 2020. The increase in the homeless community is due to women feeling more empowered to leave abusive situations as well as the universal issue of rent going up. My research poster will focus on where Buffalo's main source of money goes and what is preventing the development of new housing complexes or more shelters or resources for people who are homeless.

## Cooking Soup Without a Stove

**Leslie Ruiz**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What does hunger look like for families facing poverty in Buffalo? Impoverishment and hunger in Buffalo involve heavy usage of food pantries, dependence on public welfare such as food stamps and public assistance, living in shelters etc. It also involves limited or no access to supermarkets or chain stores with healthy food choices. Often, the most accessible option is the one that isn't nutritional for our bodies. However, this comes with the assumption that kitchen supplies are available, such as a knife, a stove or microwave, or that an adult is present with the time and energy to even prepare the food. For big families with low income, the parents often must face the choice of feeding themselves or feeding their kids. Many things that may be deemed as insignificant to the average family is a big deal as it relates to food insecurity, such as wasting food. To collect data, I gathered observations from my environment and research from credible sources online. To collect data, I gathered observations from my environment and research from credible sources online. I am also using Photovoice to aid me in my research of determining if hunger that is experienced across the US is similar to what is happening locally. Even at my school, there is a food pantry available to students which can attest to the food insecurity that is present not only in our society, but America as a whole. Overall, I aim to raise awareness about the realities of food insecurity and the depth of the issue that goes beyond just finances and geographical boundaries.

## Transportation in Buffalo

**Justin Rutland**

Faculty Mentor: Professor Jessica Fitzpatrick, Social Work

What does poverty and transportation look like in Buffalo, NY? Across the United States the public transportation system deals with numerous problems on a daily basis. These problems include but are not limited to decades of deferred maintenance, under-investments on routes, rail lines, and buses. In order to determine if what is happening nationally is also a problem here in Buffalo, I will be using Photovoice to complete my research. By using Photovoice I can make sure my point of view on these topics is heard and are brought to light in my community. The data I am collecting shows that Buffalo is no exception to the national transportation issues. This includes changing patterns of wealth, which in this case, means pushing low-income families out of the cities where bus routes are changing and some even becoming nonexistent. My goal is to help bring discrimination within the public transportation system to an end, simply by showing how certain stops in low-income neighborhoods are under-maintained, have little to no lighting nearby, and may not have any sheltered stops nearby. However, depending on where I am in relation to neighborhoods in Buffalo, I have seen some bus stops with small heaters in them. My poster will provide an overview of this issue, highlighting where Buffalo could improve, but also what Buffalo has done well.

## Inequality Within the Criminal Justice System

**Elijah Sealy**

Faculty Mentor: Professor Meg Knowles, Communication

In this research paper I will correlate the 2012 documentary *The Central Park Five* by Sarah Burns and Ken Burns with the 2016 film *13th*, by Ava DuVernay. Both films are based on the racial inequality we continue to face in the justice system of the United States. In my paper I will examine how the films portray the ways in which African Americans are treated differently from others in the justice system, are accused of crimes they didn't commit, treated unfairly in investigations, and what happens after conviction. This is exemplified by the story in *Central Park Five* of the 5 Latino and black teens accused of raping a white woman in New York's Central Park in 1989, whose lives were upended by a miscarriage of justice. DuVernay's film presents the historical background to the development of the prison system, and how provisions of the 13th Amendment to the Constitution have led to wide injustice and mass incarceration by abolishing slavery, except in the case of convicted criminals. DuVernay argues that racism in our country has flourished based on this assertion and the growth of the prison-industrial complex.

## Investigating the Mechanism in Regulation of Poly-SUMO-2/3 Chain Modification Signals on Protein Targets in Mammalian Cells

**Gabriel Smith**

Faculty Mentor: Professor Xiang-Dong "David" Zhang, Biology

The SUMO-targeted ubiquitin E3 ligase RNF4 recognizes poly-SUMO-2/3 chain signals through its four tandem SUMO-interacting motifs and mediates ubiquitination and degradation of the poly-SUMO-2/3 chain modified protein targets. By connecting the SUMOylation and ubiquitination pathways, RNF4 plays a vital role in various cellular processes, including DNA repair, protein degradation, and stress response. Similar to RNF4, the SUMO isopeptidase SENP6 also binds to poly-SUMO-2/3 chain signals through its multiple SUMO-interacting motifs and subsequently catalyzes the disassembly of poly-SUMO-2/3 chains. However, it is unclear whether the interaction of RNF4 with poly-SUMO-2/3 chain signals inhibits the SENP6-mediated disassembly of poly-SUMO-2/3 chains. To address this question, we first synthesized poly-SUMO-2/3 chains in vitro using the SUMO-activating E1 enzyme (SAE1/SAE2), the SUMO-conjugating E2 enzyme (Ubc9), the SUMO E3 ligase RanBP2/Nup358, and the His-tagged SUMO-3 proteins. In addition, we purified EYFP-tagged SENP6 from the transfected human 293T cells by immunoprecipitation using SENP6-specific antibody. Moreover, we demonstrated that the immunopurified EYFP-SENP6 contained the enzymatic activity in

disassembling the poly-SUMO-2/3 chains in vitro. We are currently testing the hypothesis that the RNF4 interaction with poly-SUMO-2/3 chains on protein targets stabilizes the chain signals by decreasing the rate of SENP6-mediated poly-SUMO-2/3 chain disassembly. Therefore, this study may elucidate a novel mechanism in control of poly-SUMO-2/3 chain modification signals in mammalian cells.

## Environmental Hazard Distribution

**Caroline Testa and Sam Lyman**

Faculty Mentor: Professor Luke Krieg, Sociology

The unequal distribution of environmental hazards imposes disproportionate risks across communities. Decades of environmental justice research show that lower income communities and communities of color tend to bear the brunt of these risks. Buffalo is a city with a long history of industrial activity and pollutants. Using the software Social Explorer and several databases on environmental hazards, we will compile a database organized by census tracts in the city of Buffalo. The data will enable us to map and analyze, historically, the distribution of environmental hazards across the city. In this way, we will measure the degree of disproportionate risk and whether associations with income and race biases exist.

## Rebuilding Future Teachers Club

**Cassandra Thurn**

Faculty Mentor: Professor Pixita Del Prado Hill, Elementary Education, Literacy, & Educational Leadership

The COVID pandemic was devastating to many student clubs and opportunities for student leadership as colleges focused on social distancing and the many challenges to teaching and learning. As we emerge from the pandemic, some colleges are trying to rejuvenate clubs and student leadership. PDS provides a nurturing context for the reemergence of student leadership opportunities. This presentation will explain how we have re-energized the Future Teachers Club at Buffalo State and how collaboration with PDS has helped get this year off to a strong start for student leadership. As President of the Future Teachers Club, I will share some successful initiatives that we have taken and some challenges that we have encountered along the way.

## Self-Regulation Problems and Drinking in College Students

**Meghan Tyler**

Faculty Mentor: Professor Michael MacLean, Psychology

The bulk of research on self-regulation problems and college students' alcohol use has focused on impulsivity as a contributing factor to alcohol use problems. The current study looked to see if other self-regulatory problems such as misjudgment and under-control also play a role in college students' alcohol use problems. Misjudgment is the tendency to mis predict the outcomes of an action; under-control is knowing there will likely be an eventual negative result yet still partaking. The sample of the current study was comprised of 165 undergraduate students at SUNY Buffalo State College (83% female; 60% Caucasian, 24.8% African American, 8.5% Hispanic, 3% Mixed race, 3% Asian, 0.8% other; ages 18-25, mean = 20.3). Participants completed an online self-report survey that included the Impulsivity, Misjudgment, Under-control Scale (IMUS), a measure of their alcohol use, and the Young Adult Alcohol Consequences Questionnaire (YAACQ). Results found that impulsivity, misjudgment, and under-control were each significantly correlated with alcohol use and alcohol-related problems. Regression models indicated that together all three variables predicted significant amounts of variance for both alcohol use and alcohol-related problems. However, in these models, no individual predictor was significant. Diagnostics and the



pattern of results suggest that collinearity may be an issue in these models. Implications for future research are discussed.

## Should We Take the Leap and Invest in Music for Our Children's Future?

**Keith Vantino, Adam Cramer, Lucas Diermyer, and Jonathan Golba**

Faculty Mentor: Professor Jane Sullivan, College Writing Program

Music is defined as vocal or instrumental sounds combined in such a way as to produce beauty of form, harmony or dissonance, and expression of emotion. Music affects people more than a nice catchy earworm, because it has both positive and negative physiological and psychological effects on humans. Although some music can have a negative effect on people, with the correct music, there can be extensive and profound benefits. The positive benefits include and are not limited to (a) reducing the effects of anxiety, (b) reducing the effects of stress and depression; and (c) improving respiration, heart rate, and muscle tension. A lot of these are problems that every single person will go through in their lifetime, and yet many do not have a conscientious awareness of the benefits of music nor the dynamic exposure to music beyond entertainment. It is known that exposure at the earliest ages helps improve brain function and development, and yet most public-school music programs do not begin prior to grade four. Anxiety and depression reaches children in elementary schools. How would exposure to music elevate student mental health in pre-K through 3rd grade? Would implementing music and music therapy programs at the elementary level actually save public school districts money in the long run? With prior IRB approval and working with the Erie County Association of School Boards, we will conduct a survey of school district business administrators and music department chairpeople in Erie County Schools to (a) get a description of current music programs, (b) what is currently done for students in grades pre-K through 3rd, (c) cost comparisons of current music programs and the implementation of a proposed expansion, and (d) a cost comparison of the implementation of a new music program and current school district costs for mental health mandates.

## 2022 Baja SAE Competition Series

**Edward Williams, William Brown, and Reginald Taylor**

Faculty Mentor: Professor Jikai Du, Engineering Technology

The Baja SAE Competition Series is a premier engineering design competition that challenges collegiate level students to conceptualize and manufacture a single-seat, off-road vehicle capable of traversing rocks, sand, logs, steep inclines, mud, and shallow water in any or all combinations and in any type of weather including rain, snow and ice. Our team will compete with other students from around the globe, with each team competing to have its design accepted for manufacture by a fictitious firm. Every aspect of the vehicle's design, production and performance will be tested in several events leading to a series of races taking place in June of 2022. This year our team is attempting to completely and radically redesign our vehicle to deal with the issues in the global supply chain caused by COVID-19. While previous teams had the luxury of ordering cheap materials and steel from overseas, our team is working to locally source materials and build relationships with local businesses. This year our team also began developing an entirely new drivetrain that's never before been implemented on a commercially available vehicle. In doing this our hopes are to reduce the overall complexity while making the vehicle more reliable and repairs much easier. Besides exposing students to techniques found in industry like welding and machining, participation in this contest gives students valuable exposure to and engagement with industry professionals to enhance skills, help build their personal network, and prepare them for the workforce after graduation.