The Office of Research Presents:

BMCC Annual Research Symposium

BARS

May 15th 2024

CUNY THE GREATEST URBAN UNIVERSITY IN THE WORLD

Run of Show

Morning Session:

Time	Event	Room
9:00am – 10:00am	Registration & Breakfast	Main Building ~ N453
10:00am – 10:10am	Opening Remarks: • Anthony E. Munroe, Ed.D., President • Erwin Wong, Ph.D., Provost and Senior Vice President of Academic Affairs • Odaelys Pollard, Ph.D., Director of Research	
10:10am – 10:15am	Careers in the Life Sciences & LifeSci NYC Internships Udara Mendis - Life Sciences Industry/Academia Analyst	
10:15am – 10:50am	Keynote Speaker – Jenny Paredes PhD	
10:50am – 11:40am	Student Oral Presentations • Brandon Campos – Science • Jada Guillouette – GIS • Ahmed Amer – Psychology • Christopher Brice – Mathematics	
11:40am – 12:30pm	Panel Discussion "Defining Research Success: Perspective from BMCC Faculty, Staff, & Alumni" • Carlene Nelson – BMCC Alumna (Business) • Ayat Agha – BMCC Alumna (Science) • Dr. Ashtian Holmes – UMLA Director • Prof. Andrew Stout – Associate Professor (Mathematics)	

Lunch Break: 12:30pm – 1:30pm

Poster Symposium:

Time	Event	Room
1:00pm – 1:15pm	Registration open for Student Presenters	Richard Harris Terrace
1:15pm – 2:15pm	Registration for Judges	
2:15pm – 4:00pm	Poster Session (Open to the Public)	
4:00pm – 4:30pm	Mentor Recognition	
4:30pm – 4:55pm	Awards & Presenter Recognition	
4:55pm – 5:00pm	Closing Remarks	
5:00pm – 5:15pm	Certificate Distribution & Poster Collection	

Message from the President

Dear Students:

It is a pleasure to welcome you to the highly anticipated BMCC Annual Research Symposium (BARS) 2024 event, where we showcase you budding researchers and scholars. As a member of this important academic community, I am very excited to witness the extraordinary growth and innovation that you have achieved. Our esteemed faculty deserve our sincere thanks and recognition for providing our students with invaluable guidance and mentorship.

BARS 2024 will feature project posters from students in various fields of study, including STEM, Social Science, Business, and the Arts, highlighting the diverse talents and interests of our student body. This event both demonstrates our students' drive and dedication while celebrating their intellectual curiosity and creativity that thrives at BMCC.

I am so pleased that Dr. Jenny Paredes, former adjunct faculty of BMCC and now a staff scientist at City of Hope LA, will serve as this year's keynote speaker. With her vast knowledge and expertise in the field of cancer research, Dr. Paredes will undoubtedly inspire our students and faculty with her insights and thoughtful discussion.

BARS is more than just a platform for presenting research projects. It is a space which fosters networking and educational growth for both our students and faculty; where ideas are exchanged, collaborations are formed, and learning is enriched.

Thank you for participating in BARS 2024 and witnessing firsthand the incredible achievements of our students and the impactful work being done across all academic disciplines. Our coming together reignites the spirit of inquiry, discovery, and innovation which are hallmarks of our college community. I join the entire college community in saluting you for participating in BARS 2024. You make us all very proud.

Sincerely,

Message from the Provost & Senior Vice President of Academic Affairs

Dear Students:

I am extremely pleased to attend the 2024 BMCC Annual Research Symposium. It provides an amazing venue for you to showcase the remarkable research that you have conducted under the guidance of some of the best faculty at BMCC. These poster sessions and projects reflect the hard work, dedication, time, and commitment that you have put in; they reflect the unique research experience that you have gained – that typically only graduate students experience. They reflect the success that you have achieved at BMCC. We are proud and in awe of what you have accomplished and are indebted also to all the faculty who have given their time and expertise to mentor you. We look forward to the years ahead as you continue to study, conduct research, and show the world how great BMCC students and graduates are. Congratulations to you and your faculty mentors for what you have and will accomplish.

Respectfully yours,

Message from the Director of Research

Dear Students, Faculty, & Staff:

To the students and faculty - thank you for all the hard work and dedication that you have put into your projects and for making BARS a success! BARS 2024 is a celebration of the incredible scholarly work and research achievements of our students, under the mentorship of our dedicated faculty members during the 2023-2024 school year. It fills me with pride to witness the diverse array of research projects showcased here today.

To our students: your passion for knowledge and your tireless pursuit of understanding are truly inspiring. Your presentations represent the culmination of countless hours of experimentation, analysis, and collaboration. I commend each and every one of you for your hard work and dedication.

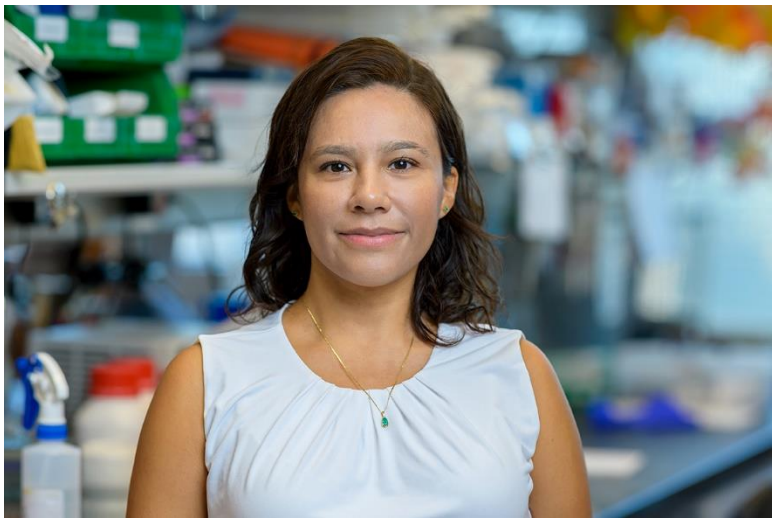
To our esteemed faculty mentors: I would like to extend my heartfelt gratitude for your guidance, support, and expertise that have been instrumental in shaping the research endeavors of our students. Your commitment to nurturing the next generation of scholars is invaluable, and it is evident in the projects presented here today.

I would like to thank all of our guests, colleagues, and community members for joining us in celebrating the achievements of our students and faculty. Your presence here today underscores the importance of supporting and promoting undergraduate research, and we are truly grateful for your continued encouragement and advocacy.

Lastly, our office would like to thank the Office of Academic Affairs, Office of Academic Advisement, CEEP, and other campus offices and departments for your support to put on this event. We would also like to thank the faculty and staff who volunteered their time today to participate as judges and our BARS volunteers for all the work they've done today and behind the scenes.

Wishing you all the best,

BARS 2024 Keynote Speaker



Jenny Paredes is a microbiologist with expertise in the fields of immunology and oncology. After her undergraduate training in Bogota, Colombia, Jenny moved to NYC to pursue a master's in biology at City University of New York, a PhD in molecular biology at SUNY Downstate and a postdoc at Memorial Sloan Kettering Cancer Center (MSKCC). At MSKCC, Dr. Paredes studied the role of diet and the intestinal microbiome in bone marrow transplantation. She now works as a Staff Scientist at City of Hope, Los Angeles, where she divides her time between her research on microbiome and the training of junior investigators. In the future, Jenny plans to become an independent investigator and to study nutrition in the context of racial-cancer-disparities.

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
1	Brandon Campos*	Science - Chemistry	Uptake of Zn(II) Ions Onto Agricultural Wastes From Aqueous Solutions: Batch Adsorption and Isotherms	Abel E. Navarro, Ph.D	CRSP
2	Nancy Osei	Science - Chemistry	Uptake of Zn(II) Ions Onto Agricultural Wastes From Aqueous Solutions: Batch Adsorption and Isotherms	Abel E. Navarro, Ph.D	CRSP
3	Sophia Pisarevskiy	Science - Chemistry	Adsorption Kinetics & Desorption of Methylene Blue Dye Using Fruit Peels	Abel E. Navarro, Ph.D	CRSP
4	Monika Hossain	Science - Chemistry	Adsorption Kinetics & Desorption of Methylene Blue Dye Using Fruit Peels	Abel E. Navarro, Ph.D	BFF
5	Amadou Nimaga	Mathematics	A Rigorous Approach To The Study Of Limits	Andrew Stout, Ph.D	Independent Study
6	Marc Legaspi	Mathematics	Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers	Andrew Stout, Ph.D	BFF
7	Peter Vaiciulis	Mathematics	Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers	Andrew Stout, Ph.D	BFF
8	Andrii Iarmolenko	Mathematics	Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers	Andrew Stout, Ph.D	BFF
9	Tosha Diamond-Huey	Science - Biology	Optimizing native species germination for rewilding	Catarina Mata, PhD	LSAMP
10	Casandra Tirado	Science - Biology	Optimizing native species germination for rewilding	Catarina Mata, PhD	LSAMP

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
11	Fatoumata Diallo	Computer Information Systems (CIS)	Enhancing Breast Cancer Diagnosis Utilizing Computer-Aided Learning and Machine Learning for improved Accuracy.	Chiaki Yanagisawa, Ph.D	CRSP
12	Luciana Fisher	Economics	Exploring the Economic Implications of Subscription-Based Services on Low-Income Individuals	Christine Farias, Ph.D.	CRSP
13	Zarnab Alam	Science - Biology	Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria	Christine Priano, Ph.D	BFF, LSAMP
14	Stephanie Eichman	Science - Biology	Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria	Christine Priano, Ph.D	BFF, LSAMP
15	Mavluda Naimova	Science - Biology	Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria	Christine Priano, Ph.D	BFF, LSAMP
16	Sokhna Mbacke	Mathematics	Experimental Verification of Newton's Law of Cooling Using Arduino Nano	Christopher McCarthy, Ph.D	CRSP
17	Jesselyn Collins	Social Science - Psychology	Attention Deficit/Hyperactivity Diagnoses and Social Media Use Among BMCC Students	David Caicedo, Ph.D.	CRSP
18	Ahmed Amer*	Social Science - Psychology	Creativity and ChatGPT	David Caicedo, Ph.D	BFF
19	Marcus Kyaw Swa	Computer Information Systems (CIS)	Enhance Job Training for Individuals with Autism using Augmented Reality	Hao Tang, Ph.D	BFF
20	Zhuangshui Jiang	Computer Information Systems (CIS)	Enhancing Video Content Accessibility for the Visually Impaired Community: A Virtual Reality Approach	Hao Tang, Ph.D	LSAMP

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
21	Hsu Khaing Zar Lwin-Naomi	Computer Information Systems (CIS)	Enhancing Urban Accessibility Data Collection Through Automation	Hao Tang, Ph.D, Jiawei Liu, Ph.D	BFF
22	Nicole Sanchez	Social Science - GIS	Linking Disparities in Drinking Water Quality Complaints: Environmental Justice in NYC Neighborhoods	Henry Bulley, Ph.D	LSAMP
23	Jada Guillouette*	Social Science - GIS	Sandy Swept Shores	Henry Bulley, Ph.D	BFF
24	Mia Pinto	Social Science - GIS	Does Your Neighborhood Socioeconomic Status Influence Your Flood Vulnerability? GIS-Based Assessment of Flood Mitigation In NYC	Henry Bulley, Ph.D	BFF
25	Tal Sharir	Science - Biology	Efficiency of Neuronal cells with 3D Agarose Cultures	Jane Tezapsidis, Ph.D	BFF
26	Shalaka Sitre	Science - Biology	The toxic effects of gluten-derived peptides on SH-SY5Y neuronal cells	Jane Tezapsidis, Ph.D	BFF
27	Anna K Claudio	Mathematics	Color Ratio of Dark Body and Light Body Painted Ladies Butterflies	Johannes Familton, Ph.D	CRSP
28	Claritz Marte	Mathematics	Color Ratios of Local Male and Female Monarch Butterflies	Johannes Familton, Ph.D	CRSP
29	Gustavo Guzmán Silva	Science - Biology	Copper and Zinc Salts in Combination with Lactic Acid Inhibit Herpes Simplex Virus Type 2 Replication in Vero Cells.	José Fernández Romero, Ph.D	CRSP
30	Kinida Joseph	Science - Biology	Modulating Animal Movement in the Aging Process of Worms (Caenorhabditis elegans)	Jun Liang, Ph.D	CRSP

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
31	Christopher Brice*	Mathematics	ILT Graphs and the Zero Forcing Process	Karl Levy, Ph.D	LSAMP
32	Suhjin Bae	Science - Biology	Identification and Characterization of Marine Bacteria Associated with Lytechinus variegatus	Lalitha Jayant, Ph.D	CRSP
33	Ali Rasouli Jomadi	Science - Biology	Identification and Characterization of Marine Bacteria Associated with Lytechinus variegatus	Lalitha Jayant, Ph.D	CRSP
34	Airel Salvador	Science - Biology	The Properties of Moringa that Promote Sea Urchin Egg Viability	Lalitha Jayant, Ph.D	BFF
35	Milena Almeida	Science - Biology	The Properties of Moringa that Promote Sea Urchin Egg Viability	Lalitha Jayant, Ph.D	BFF
36	Cesar A. Pascal	Science - Engineering	Beaver bot	Mahmoud Ardebili, Ph.D	CIPASS
37	Jalil Stephen	Science - Engineering	Beaver bot	Mahmoud Ardebili, Ph.D	CIPASS
38	Andrii Iarmolenko	Science - Engineering	Exploring the Heating and Cooling Potential of Carbon Fiber-Reinforced Conductive Concrete.	Mahmoud Ardebili, Ph.D	CIPASS
39	Riley Drcelik	Science - Engineering	Force and Deflection Across Different 3D Samples	Mahmoud Ardebili, Ph.D	CIPASS
40	Keba-Amady Nelson	Science - Engineering	Internal Structures: Flexural Testing	Mahmoud K. Ardebili, Ph.D	CIPASS

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
41	Asibur Paban	Science - Engineering	Internal Structures: Flexural Testing	Mahmoud Ardebili, Ph.D	CIPASS
42	Sebastian Valle	Science - Engineering	3D Truss Structure	Mahmoud Ardebili, Ph.D	CIPASS
43	Eran Kedar	Science - Engineering	UGV & UAV Design	Mahmoud Ardebili, Ph.D, Edgard Delgado, Ph.D	CIPASS
44	Jalil Stephen	Science - Engineering	UGV & UAV Design	Mahmoud Ardebili, Ph.D, Edgard Delgado, Ph.D	CIPASS
45	Keba Amady-Nelson	Science - Engineering	UGV & UAV Design	Mahmoud Ardebili, Ph.D Edgard Delgado, Ph.D	CIPASS
46	Morgan Guidry	Science - Biology	SIRT7 and Lamin A/C Interactions: Implications for Chromatin Organization, Genome Integrity, and Cellular Fitness	Maria Lourdes Serrano de la Pena, Ph.D	CRSP
47	Rahima Chowdhury	Science - Biology	SIRT7 and Lamin A/C Interactions: Implications for Chromatin Organization, Genome Integrity, and Cellular Fitness	Maria Lourdes Serrano de la Pena, Ph.D	CRSP
48	Sandro Tskitishvili	Computer Information Systems (CIS)	Towards an Accessible Web-Solution for Older Adults with Dementia	Mohammad Azhar, Ph.D	CRSP
49	Anthony Chimbay	Computer Information Systems (CIS)	Enhancing Emotional Intelligence in children with ASD through Facial Recognition	Mohammad Azhar, Ph.D	LSAMP
50	Emmanuel Ruiz	Computer Information Systems (CIS)	Enhancing Emotional Intelligence in children with ASD through Facial Recognition	Mohammad Azhar, Ph.D	LSAMP

Poster Session: Student Presenters

Richard Harris Terrace, 2:15pm – 4:00pm

#	Presenter	Discipline	Project Title	Mentor	Fund
51	Irfan Rahman	Computer Information Systems (CIS)	Mobile App Solutions for Caregivers and Family Members of Dementia Patients	Mohammad Azhar, Ph.D	BFF
52	Abir Mahmood	Computer Information Systems (CIS)	Towards Web-based AI Accessible Platform for Family Members of Patients with Dementia	Mohammad Azhar, Ph.D	BFF
53	Sephora Dieujuste	Business	Flatbush Avenue J My Communities	Roderick Snipes, Ph.D	CEEP
54	Anishka Fisher	Academic Literacy and Linguistics	Linguistic Analysis of Prescription Drug Rexulti Commercial	Shoba Bandi-Rao, Ph.D	Independent Study
55	Juleysi Hierro	Academic Literacy and Linguistics	Linguistic Analysis of Prescription Drug Rexulti Commercial	Shoba Bandi-Rao, Ph.D	Independent Study
56	Filip Wojda	Computer Information Systems (CIS)	Three Dimensional Reconstruction of Medical Images	Younes Benkarroum, Ph.D	CRSP
57	Ghita Mountassir	Computer Information Systems (CIS)	A Comparative Analysis of Traveling Salesman Problem Algorithms.	Younes Benkarroum, Ph.D	Independent Study
58	Asmaa Ait Hammou	Computer Information Systems (CIS)	AI-Based Implementation and Comparison of Facial Detection and Recognition Algorithms	Younes Benkarroum, Ph.D	Independent Study

***Indicates Student Oral Presenter**

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

1	Presenter:	**Brandon Campos**
	Co-Presenter(s):	**Nancy Osei**
	Mentor:	**Abel E. Navarro, Ph.D**
	Discipline:	**Science - Chemistry**
	Title:	**Uptake of Zn(II) Ions Onto Agricultural Wastes From Aqueous Solutions: Batch Adsorption & Isotherms**
	Funding:	**CRSP**
	Organic functional groups that are present in agricultural wastes like avocado, mango, orange and tangerine peels as well as papaya seeds include hydroxyl, carboxyl, amino and carbonyl. These groups are rich in lone pairs of electrons that attract positively charged ions, such as Zn(II) cations. Moreover, zinc is a prevalent ion that is present in industrial and mine runoffs. Due to its versatility and corrosion resistance, zinc is used in an array of industrial processes. This work aims to propose eco-friendly adsorbents for the removal of Zn+2 ions from solutions at room temperature in batch assays. The adsorption efficiency was explored at different experimental conditions such as pH, adsorbent dose, salinity and metal ion concentration on the adsorption and compared to activated carbon (control adsorbent). Our data indicates that adsorption is maximized at pH 7 using 50-80mg of adsorbent and in the absence of salts. Adsorption isotherm models were fitted to the experimental data displays that Elovich and Temkin models represent the adsorption with activated carbon and papaya seeds, whereas orange peels suit the Freundlich and Dubinin-Radushkevich theories. Modeling shows maximum adsorption capacities of 16.7 mg/g, 17 mg/g and 12.6 mg/g for activated carbon, orange peel and papaya seeds, respectively. The morphological and textural properties of the adsorbents were studied by scanning electron microscopy; and the thermal resistance of the material was assessed by thermogravimetric analysis. These adsorbents demonstrate a cost- effective alternative for the treatment of zinc-containing wastewaters.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

2	Presenter:	**Nancy Osei**
	Co-Presenter(s):	**Brandon Campos**
	Mentor:	**Abel E. Navarro, Ph.D**
	Discipline:	**Science - Chemistry**
	Title:	**Uptake of Zn(II) Ions Onto Agricultural Wastes From Aqueous Solutions: Batch Adsorption & Isotherms**
	Funding:	**CRSP**
	Organic functional groups that are present in agricultural wastes like avocado, mango, orange and tangerine peels as well as papaya seeds include hydroxyl, carboxyl, amino and carbonyl. These groups are rich in lone pairs of electrons that attract positively charged ions, such as Zn(II) cations. Moreover, zinc is a prevalent ion that is present in industrial and mine runoffs. Due to its versatility and corrosion resistance, zinc is used in an array of industrial processes. This work aims to propose eco-friendly adsorbents for the removal of Zn+2 ions from solutions at room temperature in batch assays. The adsorption efficiency was explored at different experimental conditions such as pH, adsorbent dose, salinity and metal ion concentration on the adsorption and compared to activated carbon (control adsorbent). Our data indicates that adsorption is maximized at pH 7 using 50-80mg of adsorbent and in the absence of salts. Adsorption isotherm models were fitted to the experimental data displays that Elovich and Temkin models represent the adsorption with activated carbon and papaya seeds, whereas orange peels suit the Freundlich and Dubinin-Radushkevich theories. Modeling shows maximum adsorption capacities of 16.7 mg/g, 17 mg/g and 12.6 mg/g for activated carbon, orange peel and papaya seeds, respectively. The morphological and textural properties of the adsorbents were studied by scanning electron microscopy; and the thermal resistance of the material was assessed by thermogravimetric analysis. These adsorbents demonstrate a cost- effective alternative for the treatment of zinc-containing wastewaters.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

3	Presenter:	**Sophia Pisarevskiy**
	Co-Presenter(s):	**Monika Hossain**
	Mentor:	**Abel E. Navarro, Ph.D**
	Discipline:	**Science - Chemistry**
	Title:	**Adsorption Kinetics & Desorption of Methylene Blue Dye Using Fruit Peels**
	Funding:	**CRSP**
	Methylene blue (MB) is commonly used as a stain or dye, but also as the antidote for a serious and life-threatening medical condition called methemoglobinemia. In this project, we explored the use of the peels of orange, pineapple, avocado and tangerine in addition to pineapple crown, avocado pit, and strawberry leaves. Batch adsorption kinetics determined the saturation time, and explored the mechanism of adsorption of MB onto these materials. In the experiment, a solution of MB was mixed with each adsorbent and small aliquots of the suspensions were taken at different time intervals to determine the residual concentration of MB by spectrophotometry. Experimental results were fitted to the theories of pseudo-first and –second order kinetics and the Elovich. The linear regression analyses indicate the pseudo-second order kinetics resembles the adsorbent/adsorbate interactions in a more efficient manner, reporting maximum adsorption capacities between 17-18 mg/g for our best adsorbents in less than 10 minutes of adsorption. Desorption studies were also carried to determine the best solutions to desorb MB from the adsorbents. Desorbing solutions included diluted acids and bases, saline solutions, distilled water, and 30% solutions of ethanol and acetone. The morphology and texture of the adsorbents before and after desorption were explored by scanning electron microscopy to evaluate impact of the desorbing solutions on the surface properties of the adsorbents. These lingo-cellulosic materials demonstrate a eco-friendly adsorbent of model dyes in a short time and potential to be recycled and used in consecutive adsorptions.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

4	Presenter:	**Monika Hossain**
	Co-Presenter(s):	**Sophia Pisarevskiy**
	Mentor:	**Abel E. Navarro, Ph.D**
	Discipline:	**Science - Chemistry**
	Title:	**Adsorption Kinetics & Desorption of Methylene Blue Dye Using Fruit Peels**
	Funding:	**BFF**
	Methylene blue (MB) is commonly used as a stain or dye, but also as the antidote for a serious and life-threatening medical condition called methemoglobinemia. In this project, we explored the use of the peels of orange, pineapple, avocado and tangerine in addition to pineapple crown, avocado pit, and strawberry leaves. Batch adsorption kinetics determined the saturation time, and explored the mechanism of adsorption of MB onto these materials. In the experiment, a solution of MB was mixed with each adsorbent and small aliquots of the suspensions were taken at different time intervals to determine the residual concentration of MB by spectrophotometry. Experimental results were fitted to the theories of pseudo-first and –second order kinetics and the Elovich. The linear regression analyses indicate the pseudo-second order kinetics resembles the adsorbent/adsorbate interactions in a more efficient manner, reporting maximum adsorption capacities between 17-18 mg/g for our best adsorbents in less than 10 minutes of adsorption. Desorption studies were also carried to determine the best solutions to desorb MB from the adsorbents. Desorbing solutions included diluted acids and bases, saline solutions, distilled water, and 30% solutions of ethanol and acetone. The morphology and texture of the adsorbents before and after desorption were explored by scanning electron microscopy to evaluate impact of the desorbing solutions on the surface properties of the adsorbents. These lingo-cellulosic materials demonstrate a eco-friendly adsorbent of model dyes in a short time and potential to be recycled and used in consecutive adsorptions.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

5	Presenter:	**Amadou Nimaga**
	Mentor:	**Andrew Stout, Ph.D**
	Discipline:	**Mathematics**
	Title:	**A Rigorous Approach To The Study Of Limits**
	Funding:	**Independent Study**
	It is commonly agreed that the object of mathematics deals with abstract entities whose properties are expressed and demonstrated using precisely defined language. However, this feature of the mathematical language was absent in the development made between 1665 and 1700- a period marked by the emergence of differential and integral calculus."Then begins an era where, thanks to new methods, an incredible number of problems are solved computationally with little concern for the validity of the proofs" (Godement 1). We thus end up with results that, though intuitively or seemingly correct, are nonetheless meaningless when taken literally, or at worst, revealed to be false (Godement 2). Whereof the need for the development starting from 1820, aiming to capture, through the elaboration of a precise language, the essence of such concepts such as limits, continuity, derivability, and more. In the present project, my aim is to study such concepts previously named with the same level of rigor that characterizes modern-day calculus. I will use the formal definition of these to demonstrate the validity of 50 results assigned by my mentor. Through explanations of the methodology used to accomplish this, I aim to illustrate that the art of mathematics, far from being merely deductive, is nevertheless an art of exploration in which we conduct experiments, make observations, and form assumptions that are then demonstrated through.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

6	Presenter:	**Marc Legaspi**
	Co-Presenter(s):	**Peter Vaiciulis, Andrii Iarmolenko**
	Mentor:	**Andrew Stout, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers**
	Funding:	**BFF**
	The purpose of our research is to identify the feasibility of the Gini Coefficient economic model in A.I. performance testing applications. By adjusting the number of solvable or goal states within an algorithm, we can have a finer measure of performance and can compare A.I. systems which are designed to solve different problems. To gauge the strength of this approach, we focus on AIs which solve Rubik's cubes by adjusting these algorithms to increase the number of goal states. Pre-existing source-code for Rubik's cube algorithms will be modified in such a way so as to allow generation and testing for pre-defined goal states within a set "complexity" depth. Once modified, the algorithms will be employed to perform several iterations of different tests that utilize different goal states, wherein the resulting data will be visualized using the adjusted Gini Coefficient model. Initial hypothesized solutions indicate that the Gini Coefficient model approach could possibly provide a finer and more sophisticated measure of algorithmic intelligence, where tracing out the Lorenz curve produced by data from the test applications will provide a reliable visualization of the strength of the A.I. systems used within the experiments.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

7	Presenter:	**Peter Vaiciulis**
	Co-Presenter(s):	**Andrii Iarmolenko, Marc Legaspi**
	Mentor:	**Andrew Stout, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers**
	Funding:	**BFF**
	The purpose of our research is to identify the feasibility of the Gini Coefficient economic model in A.I. performance testing applications. By adjusting the number of solvable or goal states within an algorithm, we can have a finer measure of performance and can compare A.I. systems which are designed to solve different problems. To gauge the strength of this approach, we focus on AIs which solve Rubik's cubes by adjusting these algorithms to increase the number of goal states. Pre-existing source-code for Rubik's cube algorithms will be modified in such a way so as to allow generation and testing for pre-defined goal states within a set "complexity" depth. Once modified, the algorithms will be employed to perform several iterations of different tests that utilize different goal states, wherein the resulting data will be visualized using the adjusted Gini Coefficient model. Initial hypothesized solutions indicate that the Gini Coefficient model approach could possibly provide a finer and more sophisticated measure of algorithmic intelligence, where tracing out the Lorenz curve produced by data from the test applications will provide a reliable visualization of the strength of the A.I. systems used within the experiments.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

8	Presenter:	**Andrii Iarmolenko**
	Co-Presenter(s):	**Marc Legaspi, Peter Vaiciulis**
	Mentor:	**Andrew Stout, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Using the Gini Coefficient to Rank AI Systems: A Case Study Using Rubik's Cube AI Solvers**
	Funding:	**BFF**
	The purpose of our research is to identify the feasibility of the Gini Coefficient economic model in A.I. performance testing applications. By adjusting the number of solvable or goal states within an algorithm, we can have a finer measure of performance and can compare A.I. systems which are designed to solve different problems. To gauge the strength of this approach, we focus on AIs which solve Rubik's cubes by adjusting these algorithms to increase the number of goal states. Pre-existing source-code for Rubik's cube algorithms will be modified in such a way so as to allow generation and testing for pre-defined goal states within a set "complexity" depth. Once modified, the algorithms will be employed to perform several iterations of different tests that utilize different goal states, wherein the resulting data will be visualized using the adjusted Gini Coefficient model. Initial hypothesized solutions indicate that the Gini Coefficient model approach could possibly provide a finer and more sophisticated measure of algorithmic intelligence, where tracing out the Lorenz curve produced by data from the test applications will provide a reliable visualization of the strength of the A.I. systems used within the experiments.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

9	Presenter:	**Tosha Diamond-Huey**
	Co-Presenter(s):	**Casandra Tirado**
	Mentor:	**Catarina Mata, PhD**
	Discipline:	**Science - Biology**
	Title:	**Optimizing Native Species Germination For Rewilding**
	Funding:	**LSAMP**
	The purpose of our research is to identify the feasibility of the Gini Coefficient economic model in A.I. performance testing applications. By adjusting the number of solvable or goal states within an algorithm, we can have a finer measure of performance and can compare A.I. systems which are designed to solve different problems. To gauge the strength of this approach, we focus on AIs which solve Rubik's cubes by adjusting these algorithms to increase the number of goal states. Pre-existing source-code for Rubik's cube algorithms will be modified in such a way so as to allow generation and testing for pre-defined goal states within a set "complexity" depth. Once modified, the algorithms will be employed to perform several iterations of different tests that utilize different goal states, wherein the resulting data will be visualized using the adjusted Gini Coefficient model. Initial hypothesized solutions indicate that the Gini Coefficient model approach could possibly provide a finer and more sophisticated measure of algorithmic intelligence, where tracing out the Lorenz curve produced by data from the test applications will provide a reliable visualization of the strength of the A.I. systems used within the experiments.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

10	Presenter:	**Casandra Tirado**
	Co-Presenter(s):	**Tosha Diamond-Huey**
	Mentor:	**Catarina Mata, PhD**
	Discipline:	**Science - Biology**
	Title:	**Optimizing Native Species Germination For Rewilding**
	Funding:	**LSAMP**
	The purpose of our research is to identify the feasibility of the Gini Coefficient economic model in A.I. performance testing applications. By adjusting the number of solvable or goal states within an algorithm, we can have a finer measure of performance and can compare A.I. systems which are designed to solve different problems. To gauge the strength of this approach, we focus on AIs which solve Rubik's cubes by adjusting these algorithms to increase the number of goal states. Pre-existing source-code for Rubik's cube algorithms will be modified in such a way so as to allow generation and testing for pre-defined goal states within a set "complexity" depth. Once modified, the algorithms will be employed to perform several iterations of different tests that utilize different goal states, wherein the resulting data will be visualized using the adjusted Gini Coefficient model. Initial hypothesized solutions indicate that the Gini Coefficient model approach could possibly provide a finer and more sophisticated measure of algorithmic intelligence, where tracing out the Lorenz curve produced by data from the test applications will provide a reliable visualization of the strength of the A.I. systems used within the experiments.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

11	Presenter:	**Fatoumata Diallo**
	Mentor:	**Chiaki Yanagisawa, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhancing Breast Cancer diagnosis Utilizing Computer-Aided Learning and Machine Learning for Improved Accuracy.**
	Funding:	**CRSP**
	Breast cancer remains a significant health concern worldwide which need to have accurate and timely diagnosis to improve the patient's health. Mammography is the most common method which available for the prediction of breast cancer. However, the interpretation of the mammographic findings can be complex and leads to unnecessary biopsy with benign outcomes. To reduce the high number of unnecessary biopsies, this research aims to enhance diagnostic accuracy by utilizing a computer-aided diagnosis based on decision learning. We investigate features of mammogram images by analyzing the training data through decision tree model. Then we seek to identify the most effective parameters of the model for improving diagnostic accuracy, and apply the optimized model to the test data to access the accuracy. One of features is Bi-Rads which stands for Breast Imagining Reporting and Data-System. It is used by radiologists to classify, to describe mammography results, and to help standardize best cancer screening and reporting. The findings from this study will contribute to advancing breast cancer detection methods and leading to a better biopsy outcome. Overall, the goal is to create a model that predicts the value of a target variable by learning simple decisions rules inferred from the data features.	

12	Presenter:	**Luciana Fisher**
	Mentor:	**Christine Farias, Ph.D.**
	Discipline:	**Economics**
	Title:	**Exploring the Economic Implications of Subscription-Based Services on Low-Income Individuals**
	Funding:	**CRSP**
	The subscription-driven business model has gained significant traction across various industries, including entertainment, software, e-commerce, and consumer goods. While this model offers convenience and flexibility to consumers, its impact on low-income families and individuals remains unexplored and understudied. This research proposal aims to investigate the economic implications of subscription-based services on low-income households, shedding light on potential challenges in how it affects their purchasing power, investing and retirement abilities, and other opportunities for this demographic group. The findings of this research will have practical implications for subscription service providers, policymakers, and consumer advocacy groups. The study aims to contribute to a more inclusive and equitable understanding of the subscription-driven business model.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

13	Presenter:	**Zarnab Alam**
	Co-Presenter(s):	**Stephanie Eichman, Mavluda Naimova**
	Mentor:	**Christine Priano, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria**
	Funding:	**BFF, LSAMP**
	The Chilean maqui berry, also known as Aristotelia chilensis, is promoted as a health "superfood" and proclaimed to have many beneficial properties. Rich in polyphenols, the maqui berry is a common dietary supplement. This experiment explores the potential antibacterial properties of the maqui berry. It was hypothesized that the berry's polyphenol compounds might contribute to notable antibacterial qualities seen in both gram-positive and gram- negative bacteria. Escherichia coli and Staphylococcus epidermidis were cultured under sterile laboratory conditions. Three different maqui berry samples were utilized. Extracts were prepared for each. Bacterial growth was measured by spectrophotometry in the presence or absence of each extract. Our results revealed that the maqui berry extracts inhibited the growth of S. epidermidis, while enhancing the growth of E. coli bacteria. Findings fromthis experiment suggest that maqui berry extract might possess significant antibacterial properties against gram-positive bacteria while conversely promoting the growth of gram-negativebacteria. Further studies are warranted to reproduce these results, in addition to identifying the specific antibacterial compounds of the maqui berry and their potential role in regulating bacterial infection.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

14	Presenter:	**Stephanie Eichman**
	Co-Presenter(s):	**Zarnab Alam, Mavluda Naimova**
	Mentor:	**Christine Priano, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria**
	Funding:	**BFF, LSAMP**
	The Chilean maqui berry, also known as Aristotelia chilensis, is promoted as a health "superfood" and proclaimed to have many beneficial properties. Rich in polyphenols, the maqui berry is a common dietary supplement. This experiment explores the potential antibacterial properties of the maqui berry. It was hypothesized that the berry's polyphenol compounds might contribute to notable antibacterial qualities seen in both gram-positive and gram- negative bacteria. Escherichia coli and Staphylococcus epidermidis were cultured under sterile laboratory conditions. Three different maqui berry samples were utilized. Extracts were prepared for each. Bacterial growth was measured by spectrophotometry in the presence or absence of each extract. Our results revealed that the maqui berry extracts inhibited the growth of S. epidermidis, while enhancing the growth of E. coli bacteria. Findings from this experiment suggest that maqui berry extract might possess significant antibacterial properties against gram-positive bacteria while conversely promoting the growth of gram-negative bacteria. Further studies are warranted to reproduce these results, in addition to identifying the specific antibacterial compounds of the maqui berry and their potential role in regulating bacterial infection.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

15	Presenter:	**Mavluda Naimova**
	Co-Presenter(s):	**Stephanie Eichman, Zarnab Alam**
	Mentor:	**Christine Priano, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Investigating the antibacterial potential of maqui berry, Aristotelia chilensis, on gram-negative and gram-positive bacteria**
	Funding:	**BFF, LSAMP**
	The Chilean maqui berry, also known as Aristotelia chilensis, is promoted as a health “superfood” and proclaimed to have many beneficial properties. Rich in polyphenols, the maqui berry is a common dietary supplement. This experiment explores the potential antibacterial properties of the maqui berry. It was hypothesized that the berry’s polyphenol compounds might contribute to notable antibacterial qualities seen in both gram-positive and gram- negative bacteria. Escherichia coli and Staphylococcus epidermidis were cultured under sterile laboratory conditions. Three different maqui berry samples were utilized. Extracts were prepared for each. Bacterial growth was measured by spectrophotometry in the presence or absence of each extract. Our results revealed that the maqui berry extracts inhibited the growth of S. epidermidis, while enhancing the growth of E. coli bacteria. Findings from this experiment suggest that maqui berry extract might possess significant antibacterial properties against gram-positive bacteria while conversely promoting the growth of gram-negative bacteria. Further studies are warranted to reproduce these results, in addition to identifying the specific antibacterial compounds of the maqui berry and their potential role in regulating bacterial infection.	

16	Presenter:	**Sokhna Mbacke**
	Mentor:	**Christopher McCarthy, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Experimental Verification of Newton's Law of Cooling Using Arduino Nano**
	Funding:	**CRSP**
	This study investigates the validity of Newton's Law of Cooling using a modern experimental setup incorporating an Arduino Nano board and DS18B20 digital temperature sensors. The primary objective was to monitor and analyze the cooling process of hot water under controlled conditions and validate it against Newton's theoretical model. The experimental apparatus consisted of an Arduino Nano, which facilitated real-time data acquisition of both the water's temperature and the ambient room temperature. Custom Arduino and Python code was developed to log and analyze this data, enabling precise tracking of the temperature differentials and cooling rates. The experiment demonstrated a strong alignment with Newton's exponential cooling model. Data collected from the dual sensors allowed for a detailed examination of the cooling curve and adjustments for ambient temperature fluctuations. Results highlighted the efficacy of using Arduino-based systems for educational and practical applications in physics. This study not only reinforces the theoretical principles of Newton's Law of Cooling but also illustrates the adaptability of microcontroller platforms in simplifying complex scientific investigations. Future research could expand on this setup to explore various environmental conditions and different cooling mediums	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

17	Presenter:	**Jesselyn Collins**
	Mentor:	**David Caicedo, Ph.D.**
	Discipline:	**Social Science - Psychology**
	Title:	**Attention Deficit/Hyperactivity Diagnoses and Social Media Use Among BMCC Students**
	Funding:	**CRSP**
	This study addresses the topic of the recent increase in Attention Deficit/Hyperactivity Disorder (ADHD) diagnoses and a possible connection between this increase and social media use among college students. The research questions this study attempts to answer are 1) whether there is a relationship between heavy social media use and ADHD diagnosis, 2) whether there is a relationship between heavy phone use and ADHD diagnosis, and 3) if those relationships are present, whether one is stronger / more significant than the other. A survey was given out to 73 undergraduate students at the Borough of Manhattan Community College (BMCC) to gather information regarding their social media use and phone use, as well as whether they had ever been diagnosed with ADHD. Respondents were twice split into three groups of low, moderate, and heavy social media use, and low, moderate, and heavy phone use. The rates of ADHD diagnosis among each of those six subgroups was then calculated and compared to each other and the rate of ADHD diagnosis among the total sample (9.6%). Based on the data gathered it was determined that while participants in the heavy phone use subgroup had a slightly higher rate of ADHD diagnosis (11.7%) than the total sample, those in the low phone use subgroup had an even higher rate of diagnosis (12.5%). Those in the heavy social media use subgroup had the lowest rate of ADHD diagnosis (0%), while those in the moderate social media use group had the highest (16.7%). These findings do not suggest a relationship between either heavy phone use or heavy social media use and ADHD diagnosis, and therefore do not support current concerns regarding heavy social media use among college students and the effect it might be having on attention and focus.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

18	Presenter:	**Ahmed Amer**
	Mentor:	**David Caicedo, Ph.D**
	Discipline:	**Social Science - Psychology**
	Title:	**Creativity and ChatGPT**
	Funding:	**BFF**
	As one of the most notable and powerful emerging technologies in artificial intelligence, ChatGPT has posed significant implications for human-AI collaboration, particularly in relation to human creativity. This study sought insight into how students of different verbal creativity levels interacted with ChatGPT predicting a correlation between degrees of verbal creativity and the likelihood of interacting with ChatGPT in an actively collaborative, dialogue style versus passively extracting its output. Forty New York City, social science college students, 70% of which are native English speakers, with a female-to-male ratio of 75%-25%, and age distributions of 68% for 18-24, 18% for 25-30, 10% for 30+ and 4% unknown, reported their Divergent Association Task (DAT) scores, completed a ChatGPT usage survey on a Likert Scale, and responded to two open-ended questions about attitudes towards AI language models. Results showed no correlations between any usage habits and DAT scores, but there was a strong, positive correlation between measures of user communication with ChatGPT and usage for the aim of inspiration. Moderate correlations were found linking curiosity with skepticism and inspiration as well. This research is vital in addressing growing concerns of AI language models diminishing creative and critical thinking skills among students, with future impacts on integrating AI tools in educational and creative contexts via human-AI collaboration and augmented intelligence models.	

19	Presenter:	**Marcus Kyaw Swa**
	Mentor:	**Hao Tang, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhance Job Training for Individuals with Autism using Augmented Reality**
	Funding:	**BFF**
	The use and application of virtual technologies for autism has increased over the years. There has been much research done on using these virtual technologies to help children with ASD. There has also been much research done on helping autistic adults prepare for job interviews. However, little or no research has been done on training them for their jobs especially through the use of augmented reality (AR). This research extends the use of AR to help autistic adults perform better at doing job-related tasks. The aim of this research is to advance our knowledge on how effective augmented reality is for helping individuals with ASD to do job-related training. We developed an AR mobile app designed to help individuals with ASD on their restaurant service job training through the implementation of augmented reality. The app guides users to complete challenging activities that they would do at their jobs and provide clear and concise instructions that the users can easily follow to practice doing those restaurant service job-related tasks until they can complete them independently. This project conducts an experiment to measure the effectiveness of augmented reality in training ASD individuals for their job.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

20	Presenter:	**Zhuangshui Jiang**
	Mentor:	**Hao Tang, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhancing Video Content Accessibility for the Visually Impaired Community: A Virtual Reality Approach**
	Funding:	**LSAMP**
	Navigating video content poses a significant challenge for the blind and low vision (BLV) community, largely due to the inherent difficulty in interpreting key visual elements, such as environmental context and the spatial arrangement of people and objects. Traditional methods, which often rely solely on audio description, may not fully convey the rich narrative and contextual elements present in video content. Our proposed study explores the potential of virtual reality (VR) to bridge this gap by simulating video environments that can be experienced through 3D audio-visual representation. We aim to assess whether this immersive approach can improve the immersion and understanding efficiency of BLV individuals. For the user study, participants from the BLV community will engage with VR simulations of video environments, designed to convey the spatial and temporal context of the original video content. The effectiveness of these simulations will be evaluated through participant surveys and comprehension assessments. Our hypothesis is that the enriched sensory input provided by the VR environment will facilitate a deeper level of engagement and a better grasp of the content than the traditional approaches.	

21	Presenter:	**Hsu Khaing Zar Lwin- Naomi**
	Mentor:	**Hao Tang, Ph.D, Jiawei Liu, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhancing Urban Accessibility Data Collection Through Automation**
	Funding:	**BFF**
	To facilitate the navigation of urban environments for blind or low-vision individuals (BLV) in New York City (NYC), a crowdsourcing data collection platform DoorFront was developed to collect street-level accessibility information of storefronts using Google Street View (GSV) images. The current workflow for data collection requires volunteers to manually capture extensive GSV images, which is time-consuming and labor-intensive. To enhance efficiency and further minimize user intervention, we propose Doorfront Turk, an automated desktop application that employs various techniques using image recognition to automatically explore storefronts using GSV to streamline the collection phase. This approach focuses on the automation of the data collection, allowing for a more rapid growth of the accessibility dataset and facilitating a streamlined contribution experience for volunteers.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

22	Presenter:	**Nicole Sanchez**
	Mentor:	**Henry Bulley, Ph.D**
	Discipline:	**Social Science - GIS**
	Title:	**Linking Disparities in Drinking Water Quality Complaints: Environmental Justice in NYC Neighborhoods**
	Funding:	**LSAMP**
	New York tap water is said to be among the best in the world because of various reasons, but mostly the water is source mainly from the Catskills mountains. However, tap water quality in marginalized neighborhoods of New York City (NYC) continues to be a phenomenon that causes angst for many New Yorkers. Historically, marginalized communities are challenged with disparities in services compared to their more affluent counterparts in higher income neighborhoods who do not have to deal with such issues regularly. Some NYC residents are unsatisfied with the water coming out from their tap and water quality concerns vary throughout the city. Previous studies have explored the causes and consequences of disparities in access to basic services such as water supply and attributed them to issues such as lack of resources, systemic underfunding of infrastructure and inequality that result in low quality of life and health issues. The goal of this research is to examine the spatial patterns in water quality complaints and potential linkages with socioeconomic status and racial-identity makeup of NYC neighborhoods. Structural racism is defined as, "the multilevel nature of racism—interacting at the interpersonal and internalized levels as well as among institutions to have impacts on a range of health outcomes." The research question of this study is, "is there any relationship between water quality complaints and neighborhood socioeconomic status and racial makeup of New York City neighborhoods"? To address this question, the study focused on urban geopolitics, as well as analyzing the notion - who gets what, when, where, how, and why. Water quality complaints data were retrieved from the NYC 311 system and processed into a spatial dataset. A Geographic Information System (GIS) software was then used to overlay the water quality complaints with median income, NYCHA Housing, and Social Justice spatial datasets. This presentation highlights the implications of water quality complaints and environmental justice prevalence in NYC neighborhoods.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

23	Presenter:	**Jada Guillouette**
	Mentor:	**Henry Bulley, Ph.D**
	Discipline:	**Social Science - GIS**
	Title:	**Sandy Swept Shores**
	Funding:	**BFF**
	Hurricane Sandy was able to expose the poor infrastructure, planning, and government resources being applied towards mitigation of extreme weather conditions, including flooding. In a dense metro city like New York, it's clear that in terms of mitigation for these events, aid is not evenly distributed. I will be analyzing the distribution of government and local aid to those that live in NYCHA housing among the coastal areas of Coney Island and Canarsie and the inland neighborhoods of the Lower East Side. In recent years, we've witnessed an uptake in flooding from torrential rain that continues to impede upon the people and the infrastructure. I will be looking into the mitigation efforts that were dispatched to the demographic of people that live in affordable housing when Hurricane Sandy first hit. I'm curious to see if any substantial progress has been made to help these populations in terms of flood mitigation, including infrastructure changes, monetary government aid, and local planning. I hope to effectively compare and showcase the need for such action in the face of increased flooding and weather events in New York. I will be using tools including ArcGIS Pro, StoryMaps, and personally collected photographs and videos. ArcGIS is a useful tool for visually mapping demographic information including location of NYCHA Housing projects, racial demographics, income, and education levels. This information would be collected from the New York City Housing Authority, a branch of the NYC.gov. Other databases collected would be able to showcase the distribution of government aid against these similar demographics to highlight the disparity. Since my point of reference begins during Hurricane Sandy, I would also like to highlight the original extent of damage in an effort to see substantial changes made. I live in the Coney Island neighborhood so I would also have the opportunity to go out and take my own pictures/videos of the area. In this research, I'm hoping to advocate for substantial mitigation efforts to be made equally available to those who are underrepresented in the community. With the rise in flooding I would also like to use this research to showcase ways to implement green infrastructure for coastal and inland regions.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

24	Presenter:	**Mia Pinto**
	Mentor:	**Henry Bulley, Ph.D**
	Discipline:	**Social Science - GIS**
	Title:	**Does Your Neighborhood Socioeconomic Status Influence Your Flood Vulnerability? GIS-Based Assessment of Flood Mitigation In NYC**
	Funding:	**BFF**
	New York City has increasingly dealt with major flooding over the years due to Climate Change. Across the boroughs we have seen excessive damage to infrastructure, property loss and even fatalities. In response to this the DEP has deployed hundreds of Green Infrastructure (GI) to mitigate this crisis. For my research I took a look into Brooklyn to find how Socioeconomic status, GI presence and NYCHA housing correlate with a neighborhood's flood vulnerability. To find the correlation I used a quantitative research method. I input the data that showed the quantity and location of the GIs in NYC, location of NYCHA housing, and the household Median income. I also used an equity map that displayed the neighborhoods that faced disparities in healthcare, water management, workforce and more. By using this data in ARCGIS Pro I was able to visually show how areas with lower Socioeconomic statuses had a significantly lower presence of GIs than neighborhoods with a higher socioeconomic status despite the latter having a lower flood risk . With this knowledge we can bring these disparities to light so that all New Yorkers can be included in flood mitigation efforts. Green infrastructures such as rain gardens, rain barrels, Right-of-way bioswales, etc have been shown not only to help with flood mitigation efforts but also provide other ecosystem services. With the equitable utilization of these infrastructures we can help protect New Yorkers who are more vulnerable to flooding and its effects.	

25	Presenter:	**Tal Sharir**
	Mentor:	**Jane M. Tezapsidis, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Efficiency of Neuronal cells with 3D Agarose Cultures**
	Funding:	**BFF**
	New technology is revolutionizing drug discovery and improving drug viability in medical research. This study explores whether 3D cultures, specifically using agarose as a matrix, can improve the viability of neuronal cultures in drug discovery, compared to 2D cultures. Using SH- SY5Y neuroblastoma cells, a cell line that is commonly employed in neurological research, we developed a 3D culture system where cells are grown in agarose-filled tubes. This setup aims to mimic the natural, three-dimensional environment of neuronal tissues. To assess the structure and viability of these cultures, we aim to embed the grown cells in wax, in order for precise sectioning and detailed microscopic examination. This model promises to be a valuable tool in the study of neurodegenerative diseases where a more accurate representation of brain tissues is crucial.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

26	Presenter:	**Shalaka Sitre**
	Mentor:	**Jane Tezapsidis, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**The toxic effects of gluten-derived peptides on SH-SY5Y neuronal cells**
	Funding:	**BFF**
	Gluten intolerance has traditionally been associated with gastrointestinal disorders, including celiac disease. However, gluten-derived peptides may affect many physiological functions beyond the gut, including cognition. Furthermore, gluten-derived peptides have been suggested to affect neuronal viability, morphology, and cell signaling pathways leading to inflammation and neurodegeneration, although the mechanisms involved remain poorly understood. Herein, we begin to investigate the pathways of gluten toxicity in neurons, using cultured SH-SY5Y cells as a disease model.	

27	Presenter:	**Anna K Claudio**
	Mentor:	**Johannes Familton, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Color Ratio of Dark Body and Light Body Painted Ladies Butterflies**
	Funding:	**CRSP**
	Painted ladies are the most widespread of all butterfly species, they are also the most commonly used in schools for educational purposes. As educators we want to make sure that we are able to reach and interest all of our students, especially the younger ones, who are visual learners. This project began in my own classroom and the purpose of it was to go further to enrich the classroom learning experience by combining biology (life cycle of the butterfly) with mathematics (adding the percentage of different colors that are found in butterfly wings). While working on this project me and Dr. Familton observed that some painted ladies had dark colored bodies (dark orange/brown), and some had light colored bodies (light brown/yellow). While we were working on this project we had to compare over 100 butterflies to make sure that our hypothesis was correct. We separated them by the colors of their bodies and investigated if these variations made any difference to the overall Dark (Brown-Black)/Light (yellow-orange) ratios. To find the overall dark/light ratios we had to analyze them by using color extractor. Color extractor is a program that breaks down each color by percentage and makes it easy to compare the differences. While analyzing and comparing the difference in the colors we had to focus on the actual colors that were visible on the wing of each butterfly. Once we were done we added all the percentages to get the final sum, and calculate the ratios. After calculating the ratios we were able to determine that wings on dark body and mixed body butterflies are dominantly dark/black. However, when it comes to light body butterflies they have similar (almost identical) amounts of light/orange and dark/black colors in their wings.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

28	Presenter:	**Claritz Marte**
	Mentor:	**Johannes Familton, Ph.D**
	Discipline:	**Mathematics**
	Title:	**Color Ratios of Local Male and Female Monarch Butterflies**
	Funding:	**CRSP**
	Due to environmental conditions, monarch butterfly migration has decreased by up to 99.9% (Carranza, 2022). To ensure monarchs' continued survival, we are conducting an entomology research (study of insects) on their color ratios to implement the results as a STEM (Science, Technology, Engineering and Math) activity into the education setting of young children. Initially, Dr. Johannes Familton raised local monarch butterflies during the pandemic - took photographs and released them into nature afterwards. Images with removed backgrounds, enhanced color exposure, and color ratios - in orange, black and grey (difference / common factor) - were obtained from TinEye Lab. Afterwards, the color ratios were documented into Google Sheets (Excel) and Drive - having concrete evidence for our findings. The concise results were that female monarch butterflies have 14.4% higher in black than males do. Similarly, male monarch butterflies have 14.4% higher in orange than females do. If the subsequent CRSP researchers follow the same protocol and obtain comparable results, Dr. Familton and I plan to write a paper. An article that will aim to assist educators in fostering children's naturalistic, spatial, and mathematical intelligences by incorporating genuine STEM practices into their curricula.	

29	Presenter:	**Gustavo Guzmán Silva**
	Mentor:	**José Fernández Romero, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Copper and Zinc Salts in Combination with Lactic Acid Inhibit Herpes Simplex Virus Type 2 Replication in Vero Cells.**
	Funding:	**CRSP**
	Herpes Simplex Virus Type 2 (HSV-2) is a prevalent sexually transmitted infection, notorious for causing genital herpes and occasionally, herpes labialis. Currently, there is no available vaccine for HSV-2; however, abstinence, monogamy, or the use of protective barriers such as condoms, can help to prevent the infection. Additionally, scientists are exploring the use of topical formulations or devices to prevent HSV-2 sexual transmission. We explored the anti-HSV-2 activity of copper sulphate, zinc lactate, and lactic acid in a cell-based assay. For this purpose, the virucidal activity of each molecule alone or combinations of them were tested in Vero cells in the presence or not of human genital fluids (seminal and vaginal fluid). Our findings show a significant reduction in HSV-2 titer after treatment with all molecules, except zinc lactate alone, in the absence of genital fluids ($p<0.0001$); however, when genital fluids are added to the experiment, only the combinations, not the individual compounds, significantly reduced the viral titer ($p<0.0001$). The promising results allow us to continue exploring the use of these molecules in formulations or devices that may prevent HSV-2 sexual transmission.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

30	Presenter:	**Kinida Joseph**
	Mentor:	**Jun Liang, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Modulating animal movement in the aging process of worms (Caenorhabditis elegans)**
	Funding:	**CRSP**
	Caenorhabditis elegans is a tiny, free-living nematode found worldwide usually observed with either dissecting microscopes or compound microscopes in a lab setting. It has a rapid life cycle (3 days at 25° from egg to adult). C. elegans is a self-fertilizing hermaphrodite, although males arise at a frequency of <0.2% (Wormbook, 2015). This study explores the function of Chloride Intracellular Channel Proteins (CLICs) in Caenorhabditis elegans. Exl-1 is a member of CLICs in C. elegans. It has been reported that exl-1 responds to heat stress and translocates from the cytoplasm to the nucleus in intestinal cells. This indicates the function of exl-1 /CLICs in heat stress management in C. elegans. During this project, we were able to measure the movement of different mutant strains of C. elegans such as the daf-2 and daf-2; exl-1(double mutants). ImageJ software was used to trace the distance that animals moved at room temperature. Three trials were conducted to ensure accuracy in the process. The total length of movement was measured from each plate of strains at different date of lifespan. This data was then analyzed using Excel. The findings indicate that the daf-2; exl-1 mutants have more movement than that of the daf-2 mutants. Thus, daf-2; exl-1 mutants are more mobile than daf-2 mutants, giving us an insight into the aging process of C. elegans.	

31	Presenter:	**Christopher Brice**
	Mentor:	**Karl Levy, Ph.D**
	Discipline:	**Mathematics**
	Title:	**ILT Graphs and the Zero Forcing Process**
	Funding:	**LSAMP**
	In graph theory, a graph is a set of vertices (dots) with edges (lines) joining some of them. The Iterative Local Transitive (ILT) Model of a graph refers to a method of obtaining new graphs with more vertices starting from the given graph. The vertices in the graphs we consider are either white or black. The Zero Forcing Process is a color change rule whereby a black vertex forces a white vertex to become black if that is the only white vertex it is adjacent to. In this work, we have explored features, examples, and some applications of zero forcing on ILT graphs. This work is relevant and applicable to graph searching (employing algorithms, like zero forcing, that systematically explore the vertices and edges of a graph) and determining how diffuse a network is (how fast information can spread in a network given some rules, like zero forcing on ILT graphs).	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

32	Presenter:	**Suhjin Bae**
	Co-Presenter(s):	**Ali Rasouli Jomadi**
	Mentor:	**Lalitha Jayant, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Identification and Characterization of Marine Bacteria Associated with Lytechinus variegatus**
	Funding:	**CRSP**
	This study aims to identify and characterize bacterial flora that coexists on the surface and test of the sea urchin, Lytechinus variegatus. Several bacterial strains were isolated from wild type of sea urchins by gently swabbing their external surfaces and plating them onto marine agar plates. 14 were chosen for identification and characterization. Gram staining of these isolated bacteria revealed all were gram negative rods. Current results indicate that all bacteria are oxidase positive and do not ferment lactose. One of the isolated bacteria was agarolytic in nature. Bacteria were tested for antimicrobial properties and antibiotic resistance. None of the bacteria showed anti microbial properties while some of them showed resistance to antibiotics. Chromosomal DNA of all the 14 bacteria were isolated, and the conserved 500 bp of the 16S rRNA gene was amplified by PCR. Samples will be sequenced and subjected to phylogenetic analysis using QUIIME software. They will also be tested for bioactive compounds	

33	Presenter:	**Ali Rasouli Jomadi**
	Co-Presenter(s):	**Suhjin Bae**
	Mentor:	**Lalitha Jayant, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**Identification and Characterization of Marine Bacteria Associated with Lytechinus variegatus**
	Funding:	**CRSP**
	This study aims to identify and characterize bacterial flora that coexists on the surface and test of the sea urchin, Lytechinus variegatus. Several bacterial strains were isolated from wild type of sea urchins by gently swabbing their external surfaces and plating them onto marine agar plates. 14 were chosen for identification and characterization. Gram staining of these isolated bacteria revealed all were gram negative rods. Current results indicate that all bacteria are oxidase positive and do not ferment lactose. One of the isolated bacteria was agarolytic in nature. Bacteria were tested for antimicrobial properties and antibiotic resistance. None of the bacteria showed anti microbial properties while some of them showed resistance to antibiotics. Chromosomal DNA of all the 14 bacteria were isolated, and the conserved 500 bp of the 16S rRNA gene was amplified by PCR. Samples will be sequenced and subjected to phylogenetic analysis using QUIIME software. They will also be tested for bioactive compounds	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

34	Presenter:	**Airel Salvador**
	Co-Presenter(s):	**Milena Almeida**
	Mentor:	**Lalitha Jayant, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**The Properties of Moringa that Promote Sea Urchin Egg Viability**
	Funding:	**BFF**
	This study aims to expand upon a previous study, which found that aqueous extracts of Moringa oleifera, a tree found in the Indian subcontinent, were able to preserve the viability of eggs obtained from the sea urchin species Lytechinus variegatus for up to seven days. Aqueous moringa leaf extracts were obtained by brewing commercial moringa leaf powder in water at different temperatures. To identify the properties of moringa that allowed it to preserve sea urchin eggs, the extracts were tested for their antibacterial properties using slight modifications of standard methods. Preliminary results s indicate that the aqueous extracts brewed at 90°C for thirty minutes and at 100°C for thirty and sixty minutes showed antibacterial activity when used at 50% concentration. However, the extracts were able to hinder bacterial growth when introduced during lag phase and not when added during log phase. Furthermore, the extracts, especially the ones extracted at 90°C and 100°C, showed a Total Antioxidant Capacity (TAC) of 5 ± 0.5 mmol Trolox equivalent TR/g. More studies are needed to further ascertain the antibacterial activity of aqueous moringa leaf extracts.	

35	Presenter:	**Milena Almeida**
	Co-Presenter(s):	**Airel Salvador**
	Mentor:	**Lalitha Jayant, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**The Properties of Moringa that Promote Sea Urchin Egg Viability**
	Funding:	**BFF**
	This study aims to expand upon a previous study, which found that aqueous extracts of Moringa oleifera, a tree found in the Indian subcontinent, were able to preserve the viability of eggs obtained from the sea urchin species Lytechinus variegatus for up to seven days. Aqueous moringa leaf extracts were obtained by brewing commercial moringa leaf powder in water at different temperatures. To identify the properties of moringa that allowed it to preserve sea urchin eggs, the extracts were tested for their antibacterial properties using slight modifications of standard methods. Preliminary results s indicate that the aqueous extracts brewed at 90°C for thirty minutes and at 100°C for thirty and sixty minutes showed antibacterial activity when used at 50% concentration. However, the extracts were able to hinder bacterial growth when introduced during lag phase and not when added during log phase. Furthermore, the extracts, especially the ones extracted at 90°C and 100°C, showed a Total Antioxidant Capacity (TAC) of 5 ± 0.5 mmol Trolox equivalent TR/g. More studies are needed to further ascertain theantibacterial activity of aqueous moringa leaf extracts.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

36	Presenter:	**Cesar A. Pascal**
	Co-Presenter(s):	**Jalil Stephen**
	Mentor:	**Mahmoud Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Beaver bot**
	Funding:	**CIPASS**
	The project is to construct Beaver Bot, a robot designed to autonomously collect and transport wooden bars placed along a prescribed track. The project is inspired by the lumber industry and its namesake. Beaver Bot utilizes a combination of sensors and actuators to achieve its objective. Its locomotion is provided by DC motors, propelling the Beaver Bot along the track. To navigate the path accurately, the Beaver Bot employs an array of sensors that detect the path ensuring it stays on course. Additionally, ultrasonic sensors act as its eyes, locating the wooden bars along its path. Upon locating a bar, Beaver Bot's servo-controlled arm is activated. The arm reaches out and grabs the bar. Once the bar is secured, a system of belt and pulley efficiently transports the collected bars to a central container. An Arduino microcontroller is the robot's processor. It receives signal from sensors and sends commands to the servos motors actuating arm and DC motors propelling the robot. The Beaver Bot's success lies in the seamless integration of these components. Through iterative design and testing, challenges like sensor accuracy and coordinated arm movements are addressed. This focus on component synergy results in a highly effective robotic system. Ultimately, the Beaver Bot serves as a testament to the potential of autonomous object manipulation in structured environments. Its ability to navigate, detect, collect, and transport objects showcases advancements in robotic design.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

37	Presenter:	**Jalil Stephen**
	Co-Presenter(s):	**Cesar A. Pascal**
	Mentor:	**Mahmoud Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Beaver bot**
	Funding:	**CIPASS**
	The project is to construct Beaver Bot, a robot designed to autonomously collect and transport wooden bars placed along a prescribed track. The project is inspired by the lumber industry and its namesake. Beaver Bot utilizes a combination of sensors and actuators to achieve its objective. Its locomotion is provided by DC motors, propelling the Beaver Bot along the track. To navigate the path accurately, the Beaver Bot employs an array of sensors that detect the path ensuring it stays on course. Additionally, ultrasonic sensors act as its eyes, locating the wooden bars along its path. Upon locating a bar, Beaver Bot's servo-controlled arm is activated. The arm reaches out and grabs the bar. Once the bar is secured, a system of belt and pulley efficiently transports the collected bars to a central container. An Arduino microcontroller is the robot's processor. It receives signal from sensors and sends commands to the servos motors actuating arm and DC motors propelling the robot. The Beaver Bot's success lies in the seamless integration of these components. Through iterative design and testing, challenges like sensor accuracy and coordinated arm movements are addressed. This focus on component synergy results in a highly effective robotic system. Ultimately, the Beaver Bot serves as a testament to the potential of autonomous object manipulation in structured environments. Its ability to navigate, detect, collect, and transport objects showcases advancements in robotic design.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

38	Presenter:	**Andrii Iarmolenko**
	Mentor:	**Mahmoud Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Exploring the Heating and Cooling Potential of Carbon Fiber-Reinforced Conductive Concrete.**
	Funding:	**CIPASS**
	The use of conventional building materials significantly impacts global energy consumption, particularly in the heating and cooling of buildings. This project explores the potential of carbon fiber-reinforced conductive concrete (CCCF) as a novel material for improved building thermal management. The incorporation of carbon fiber into the concrete is enhances its electrical conductivity, which influences thermal dispersion and improves passive heat transfer within structures. To investigate the potential of CCCF, experiments were conducted to analyze the electrical conductivity, thermal dispersion, and heat generation capabilities of CCCF samples with varying carbon fiber content. Our goal was to determine the optimal carbon fiber content required to achieve the desired thermal management properties. We analyzed the possibility of utilizing CCCF for building cooling and heating. We considered the combined effects of CCCF on heat transfer and assessed its potential benefits for energy-efficient construction practices. Our findings provide insights into using CCCF as a sustainable and innovative building material for effective thermal management. This can significantly reduce energy consumption and contribute to a more sustainable environment.	

39	Presenter:	**Riley Drcelik**
	Mentor:	**Mahmoud Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Force and Deflection Across Different 3D Samples**
	Funding:	**CIPASS**
	This study explores the relationship between different kinds of forces and the relationships between them and flexural modulus. Tension, compression and deflection were all measured using 3D printed samples set up in a testing environment. The results were recorded using a device which held in the samples as needed, and was changed depending on what the test required. Throughout the experiments different samples were used, and various factors, such as their material and infill were recorded with dimensions throughout each test remaining consistent. Through different tests, it was determined that testing deflection would be optimal, since it was difficult to produce accurate enough results from the limited testing setup. For both the tension and compression tests, the samples used didn't provide noticeable results before hitting their limits and either fully buckling or snapping. With the deflection test, however, we were able to make accurate measurements and were able to notice a linear relationship between deflection and force. Additionally, different materials and infills had different strengths, while retaining this linear relationship. On average, PLA plastic tended to fare better than ABS plastic, taking a larger amount of force to deflect the same amount. While not as strongly observed, it was noticed that the infill direction mattered, with 90 degree infills performing poorly compared to infills at a 45 degree angle.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

40	Presenter:	**Keba-Amady Nelson**
	Co-Presenter(s):	**Asibur Paban**
	Mentor:	**Mahmoud K. Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Internal Structures: Flexural Testing**
	Funding:	**CIPASS**
	Engineers design everyday structures to withstand a particular load limit. As objects become more extensive, the limitations must increase to ensure a safe experience. However, increasing the limits requires more resources which also increases cost. Engineers maximize strength while minimizing materials by designing internal structures. Flexural testing measures the force needed to bend a beam. Flexural testing also determines the resistance to flexing or stiffness of a material. Flexural testing is known as three-point bending because of the three points of contact on the sample. To satisfy the ASTM D790 required dimensions, the specimen generally must be 3.2 mm (deep), 12.7 mm (wide), and 127 mm (long). Flexural testing requires a secured sample on two bottom points, equal distances apart. A single point above pushes down, bending the specimen. Results show that an infill pattern of ±45° deemed best for flexural testing. On average, the ±45° had more than a 10-newtons difference than 0,90°. The type of material also has an impact. On average, PLA showed nearly a 20-newtons difference from ABS in 0,90° and ±45°. Lastly, the type of printer can affect the quality of the sample. Despite both utilizing PLA, Prusa beats Ultimaker on average by 3-Newtons. For future tests, expanding testing materials outside of PLA and ABS will give a wider range of data to compare. In addition, using more precise instruments, such as cameras and higher-quality test beds, will result in more accurate data.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

41	Presenter:	**Asibur Paban**
	Co-Presenter(s):	**Keba-Amady Nelson**
	Mentor:	**Mahmoud K. Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**Internal Structures: Flexural Testing**
	Funding:	**CIPASS**
	Engineers design everyday structures to withstand a particular load limit. As objects become more extensive, the limitations must increase to ensure a safe experience. However, increasing the limits requires more resources which also increases cost. Engineers maximize strength while minimizing materials by designing internal structures. Flexural testing measures the force needed to bend a beam. Flexural testing also determines the resistance to flexing or stiffness of a material. Flexural testing is known as three-point bending because of the three points of contact on the sample. To satisfy the ASTM D790 required dimensions, the specimen generally must be 3.2 mm (deep), 12.7 mm (wide), and 127 mm (long). Flexural testing requires a secured sample on two bottom points, equal distances apart. A single point above pushes down, bending the specimen. Results show that an infill pattern of ±45° deemed best for flexural testing. On average, the ±45° had more than a 10-newtons difference than 0,90°. The type of material also has an impact. On average, PLA showed nearly a 20-newtons difference from ABS in 0,90° and ±45°. Lastly, the type of printer can affect the quality of the sample. Despite both utilizing PLA, Prusa beats Ultimaker on average by 3-Newtons. For future tests, expanding testing materials outside of PLA and ABS will give a wider range of data to compare. In addition, using more precise instruments, such as cameras and higher-quality test beds, will result in more accurate data.	

42	Presenter:	**Sebastian Valle**
	Mentor:	**Mahmoud K. Ardebili, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**3D Truss Structure**
	Funding:	**CIPASS**
	During this project, I learned about the integrity of 3D printed structures such as truss bridges. The truss was designed using Fusion app. A multipurpose cad/simulation software developed by Autodesk. The structure was then 3d Printed by two different printers. The first was created by Uprint from STRATASYS using Acrylonitrile butadiene styrene (ABS). The second one was created by X1 from Bambu Labs using Polylactic acid (PLA). The goal was to determine the integrity of the structure and how different printers and materials affect its ultimate strength. We began by testing a bridge in real life to ascertain what the breaking point was. Then, we employed Fusion and simulated the structure under loading conditions to determine stresses in each frame of the bridge and assess the experimental set up. We varied the dimensions of frames in the statures and tested it for integrity. We found the optimal dimensions to be 2.5 X 5.0 mm. This model was tested by applying 3kg loads (about 30 N of force) on the two inner joints in the lower cord of a plastic bridge. We observed that the bridge failure was not due to the load but due to how it was anchored to the support system.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

43	Presenter:	**Eran Kedar**
	Co-Presenter(s):	**Jalil Stephen, Keba Amady-Nelson**
	Mentor:	**Mahmoud K. Ardebili, Ph.D, Edgard Delgado, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**UGV & UAV Design**
	Funding:	**CIPASS**
	Throughout the semester, our team conducted research and experiments on Unmanned Aerial Vehicles (UAVs) and Unmanned Ground Vehicles (UGVs) to develop a system to simulate a rescue mission in scenarios where manned aerial flight is unfeasible and navigation presents challenges. Our UGV, dubbed "Hot-Rod," is a modular line-following ground vehicle tasked with navigating a designated course. Meanwhile, our UAV, named "Xcie," is a modular aerial vehicle controlled remotely. Xcie's mission entails transporting our UGV along a predefined flight route across the course and deploying Hot-Rod, equipped with color and distance sensors, onto a landing platform through a release mechanism. The primary focus of our project encompassed weight reduction, achieving maximum modularity in our vehicles, and investigating the flight stability of quadcopters. By emphasizing these aspects, we aimed to optimize the performance and efficiency of our system, thereby enhancing its viability for real-world rescue operations in challenging environments. Through our research and experimentation, we aimed to contribute valuable insights and advancements to unmanned vehicle technology, particularly in rescue missions and navigation under adverse conditions.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

44	Presenter:	**Jalil Stephen**
	Co-Presenter(s):	**Eran Kedar, Keba Amady-Nelson**
	Mentor:	**Mahmoud K. Ardebili, Ph.D, Edgard Delgado, Ph.D**
	Discipline:	**Science - Engineering**
	Title:	**UGV & UAV Design**
	Funding:	**CIPASS**
	Throughout the semester, our team conducted research and experiments on Unmanned Aerial Vehicles (UAVs) and Unmanned Ground Vehicles (UGVs) to develop a system to simulate a rescue mission in scenarios where manned aerial flight is unfeasible and navigation presents challenges. Our UGV, dubbed "Hot-Rod," is a modular line-following ground vehicle tasked with navigating a designated course. Meanwhile, our UAV, named "Xcie," is a modular aerial vehicle controlled remotely. Xcie's mission entails transporting our UGV along a predefined flight route across the course and deploying Hot-Rod, equipped with color and distance sensors, onto a landing platform through a release mechanism. The primary focus of our project encompassed weight reduction, achieving maximum modularity in our vehicles, and investigating the flight stability of quadcopters. By emphasizing these aspects, we aimed to optimize the performance and efficiency of our system, thereby enhancing its viability for real-world rescue operations in challenging environments. Through our research and experimentation, we aimed to contribute valuable insights and advancements to unmanned vehicle technology, particularly in rescue missions and navigation under adverse conditions.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

46	Presenter:	**Morgan Guidry**
	Co-Presenter(s):	**Rahima Chowdhury**
	Mentor:	**Maria Lourdes Serrano de la Pena, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**SIRT7 and Lamin A/C Interactions: Implications for Chromatin Organization, Genome Integrity, and Cellular Fitness**
	Funding:	**CRSP**
	Sirtuin proteins (SIRT) are a family of protein deacetylases—which repress gene expression—that mediate signaling between the environment and cellular homeostasis. Dr. Serrano's laboratory provided the first evidence of accelerated aging and genome instability in mice without sirtuin 7 (SIRT7) (1). They also identified a novel interaction between SIRT7 and the protein Lamin A/C, which makes up the nuclear lamina, in the repression of ancient viral DNA insertions called retrotransposons (2). The anchoring of chromatin—tightly wound DNA—with the nuclear lamina is essential for chromatin organization, and aged and cancerous cells present disrupted levels of nuclear Lamin proteins. Preliminary results showed that SIRT7 interacts with Lamin A/C residues—recognition sites on the protein—that get hyperacetylated without SIRT7, weakening the structure of the nucleus. We hypothesize that SIRT7-mediated Lamin A/C deacetylation regulates nuclear lamina assembly and the association of chromatin with the nuclear lamina. We tested this hypothesis by modifying these residues through in situ mutagenesis, generating eight mutants targeting three different lysine residues via base substitutions on the Lamin A/C gene resulting in amino acid changes that mimic acetylated and deacetylated lysine. Determining the specific molecular pathways that participate in SIRT7-Lamin A/C interaction could bring new possibilities for cancer treatment and a range of degenerative disorders and premature aging syndromes.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

47	Presenter:	**Rahima Chowdhury**
	Co-Presenter(s):	**Morgan Guidry**
	Mentor:	**Maria Lourdes Serrano de la Pena, Ph.D**
	Discipline:	**Science - Biology**
	Title:	**SIRT7 and Lamin A/C Interactions: Implications for Chromatin Organization, Genome Integrity, and Cellular Fitness**
	Funding:	**CRSP**
	Sirtuin proteins (SIRT) are a family of protein deacetylases—which repress gene expression—that mediate signaling between the environment and cellular homeostasis. Dr. Serrano's laboratory provided the first evidence of accelerated aging and genome instability in mice without sirtuin 7 (SIRT7) (1). They also identified a novel interaction between SIRT7 and the protein Lamin A/C, which makes up the nuclear lamina, in the repression of ancient viral DNA insertions called retrotransposons (2). The anchoring of chromatin—tightly wound DNA—with the nuclear lamina is essential for chromatin organization, and aged and cancerous cells present disrupted levels of nuclear Lamin proteins. Preliminary results showed that SIRT7 interacts with Lamin A/C residues—recognition sites on the protein—that get hyperacetylated without SIRT7, weakening the structure of the nucleus. We hypothesize that SIRT7-mediated Lamin A/C deacetylation regulates nuclear lamina assembly and the association of chromatin with the nuclear lamina. We tested this hypothesis by modifying these residues through in situ mutagenesis, generating eight mutants targeting three different lysine residues via base substitutions on the Lamin A/C gene resulting in amino acid changes that mimic acetylated and deacetylated lysine. Determining the specific molecular pathways that participate in SIRT7-Lamin A/C interaction could bring new possibilities for cancer treatment and a range of degenerative disorders and premature aging syndromes.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

48	Presenter:	**Sandro Tskitishvili**
	Mentor:	**Mohammad Azhar, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Towards an Accessible Web-Solution for Older Adults with Dementia**
	Funding:	**CRSP**
	According to the World Health Organization (WHO), 55 million people were affected by dementia in 2020, though by 2050 that number could reach 139 million. Those living with dementia face a unique set of challenges affecting their quality of life including vision and hearing loss, motor impairment, and problems with memory and cognition. Furthermore, over 60% of patients live in low-middle- income countries, where quality care is more difficult to attain. Researchers have already explored the use of applications on devices such as iPads and tablets to recognize and improve cognitive functioning and found promising results. However, research is still in its infancy with regard to accessible web-based applications, attempting to correlate cognition with patient care, and adjusting accessible-design guidelines to meet the specific needs of those living with dementia. In this research, we explore designing an accessible web platform to connect caregivers, patients, and family members, while implementing useful tools for all involved. In phase 1 of our research, we will develop an online accessible platform for patients based on past work from Dr. Azhar's Health and Aging Research Group. In phase 2, we will expand the platform to support caregivers and family members and connect data sources to a cloud database. In phase 3, we analyze patient web-activity data from our web platform's games and utilities to correlate with patients' mental condition utilizing advances in AI/Machine learning to improve patient outcomes. The overarching goal of the project is to devise an affordable, effective, scalable, and accessible web solution for people with dementia living in all parts of the world.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

49	Presenter:	**Anthony Chimbay**
	Co-Presenter(s):	**Emmanuel Ruiz**
	Mentor:	**Mohammad Azhar, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhancing Emotional Intelligence in children with ASD through Facial Recognition**
	Funding:	**LSAMP**
	Children with Autism Spectrum Disorder (ASD) often struggle to understand social cues and interpret emotions, which can make it challenging for them to navigate social interactions smoothly. Interactive technology accessible via the internet could potentially help children improve their emotional intelligence and better understand social cues. However, previous research on applications and technology aimed at aiding children in understanding social cues has mostly focused on the internal world (fictional stories, scenarios, etc.). To be effective, the program needs to involve exteroception (awareness of the external world) so that children can self-observe and understand emotions beyond copying the emotions of fictional characters. Our research aims to examine how a website that utilizes facial recognition technology and the 8 Pillars X 8 Layers Model of Metacognition scaling, a comprehensive framework addressing sensory processing, could improve emotional intelligence in children with ASD. By combining these two aspects, our goal is to help children understand emotions by utilizing facial recognition software to guide and assist them in understanding the stimuli that correspond to emotions during social interactions.	

50	Presenter:	**Emmanuel Ruiz**
	Co-Presenter(s):	**Anthony Chimbay**
	Mentor:	**Mohammad Azhar, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Enhancing Emotional Intelligence in children with ASD through Facial Recognition**
	Funding:	**LSAMP**
	Children with Autism Spectrum Disorder (ASD) often struggle to understand social cues and interpret emotions, which can make it challenging for them to navigate social interactions smoothly. Interactive technology accessible via the internet could potentially help children improve their emotional intelligence and better understand social cues. However, previous research on applications and technology aimed at aiding children in understanding social cues has mostly focused on the internal world (fictional stories, scenarios, etc.). To be effective, the program needs to involve exteroception (awareness of the external world) so that children can self-observe and understand emotions beyond copying the emotions of fictional characters. Our research aims to examine how a website that utilizes facial recognition technology and the 8 Pillars X 8 Layers Model of Metacognition scaling, a comprehensive framework addressing sensory processing, could improve emotional intelligence in children with ASD. By combining these two aspects, our goal is to help children understand emotions by utilizing facial recognition software to guide and assist them in understanding the stimuli that correspond to emotions during social interactions.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

51	Presenter:	**Irfan Rahman**
	Mentor:	**Mohammad Azhar, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Mobile App Solutions for Caregivers and Family Members of Dementia Patients**
	Funding:	**BFF**
	This research aims to develop a comprehensive mobile application, DementiaGuard, designed to enhance the care and safety of individuals with dementia. Inspired by existing technologies for medication tracking and vital signs monitoring, our application integrates these features with advanced tools for daily management. DementiaGuard provides timely reminders, tracks medication schedules, and offers voice-controlled accessibility, ensuring ease of use for people with varying abilities. Additionally, it includes wearable device integration to locate users quickly if they wander or get lost. The application supports multiple languages to cater to a global audience and features a resource library with information on dementia care, medications, and legal considerations. A community forum= within the app allows caregivers to connect, share experiences, and access support. By focusing on user friendly design and versatile functionality, DementiaGuard aims to significantly improve the quality of life for people with dementia and reduce the caregiving burden, with the potential for future enhancements based on user feedback and technological advancements.	

52	Presenter:	**Abir Mahmood**
	Mentor:	**Mohammad Q. Azhar, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Towards Web-based AI Accessible Platform for Family Members of Patients with Dementia**
	Funding:	**BFF**
	According to the 2023 World Health Organization data, more than 55 million people are diagnosed with dementia. Dementia patients may experience memory loss, and difficulty with daily tasks, and communication problems. Dementia can bring challenges to the family members of the patient which will require time and resources for them to overcome. A few factors of how dementia can affect family members are – emotional distress, social isolation, and physical/mental exhaustion. Recently, researchers surveyed family members on AI/technology solutions for assistance, and early recognition/treatment of these conditions and concluded these technologies could lead to significant improvements. However, more than 60% of Dementia patients and their families live in middle low-income countries making it difficult to access cutting-edge technologies. Our focus is to create an AI chatbot designed for dementia and ensure that the responses are thoughtful, informative, and empathetic. Phase 1 of this research project involves surveying existing research literature to gather ideas and gain knowledge on dementia patients, their families from low-income countries, and their surroundings. In phase 2, we plan to complete the design of a prototype of the accessible multi-language website with AI Chatbot that will support family members of Dementia patients from low-income countries. Our research aims to explore web-based and AI approaches and strategies for empowering family members and caregivers to provide better care and support to dementia patients.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

53	Presenter:	**Sephora Dieujuste**
	Mentor:	**Roderick Snipes, Ph.D**
	Discipline:	**Business**
	Title:	**Exploring Challenges and Opportunities in Black Communities**
	Funding:	**CEEP**
	This study investigates the limited presence of Black-owned businesses in Black neighborhoods, focusing on the Flatland area of Brooklyn, NY. Through community discovery and online research, the investigation explores historical disparities (redlining, segregation), financial hurdles (capital access, discriminatory lending), systemic racism (biased business practices), and entrepreneurial resources (education, mentorship networks). The findings suggest that these factors create a complex landscape hindering Black business ownership. The research emphasizes the importance of community investment, mentorship programs, and addressing historical inequities to empower Black entrepreneurship and foster economic growth within Black communities. Keywords: Black-owned businesses, economic inequality, racial disparities, entrepreneurship, community development.	

54	Presenter:	**Anishka Fisher**
	Co-Presenter(s):	**Juleysi Hierro**
	Mentor:	**Shoba Bandi-Rao, Ph.D**
	Discipline:	**Academic Literacy and Linguistics**
	Title:	**Linguistic Analysis of Prescription Drug Rexulti Commercial**
	Funding:	**Independent Study**
	In the United States, pharmaceutical companies are permitted to advertise prescription drugs directly to consumers on television, unlike in Europe where such advertising is banned. Although FDA regulations mandate that these ads explicitly state side effects, American drug companies employ sophisticated linguistic tactics to minimize the risks. This study conducted a linguistic analysis of Rexulti, a medication used to treat a host of depressive disorders. Using Praat, a speech analysis software, we measured speech rate and pitch levels for the speech used to state the benefits and risks. We found that a normal speech rate (how fast one speaks) was used in the message promoting the benefits of the drug (4.71 syllables per second), but a faster speech rate was used while stating its risks (5.4 syllables per second). Faster speech rate increases cognitive processing time, affecting the listeners' comprehension of the risks. As for pitch (the degree of highness or lowness of speech tone), a higher pitch female voice (mean-181.86 Hz) was used to discuss the benefits of the drug, which makes it easier for the listener to discern the words. In contrast, a lower pitch female voice (Mean- 132.08 Hz) was used to state the risks. Additionally, instances of raised voice pitch to emphasize certain words such as product name in the main message and the lack of pronoun usage in the warning to reduce personalization were observed. In conclusion, this study underscores the strategic use of linguistic strategies in shaping persuasive messaging in prescription drug commercials.	

Poster Session
Student Presenters Abstracts
Richard Harris Terrace, 2:15pm – 4:00pm

55	Presenter:	**Juleysi Hierro**
	Co-Presenter(s):	**Anishka Fisher**
	Mentor:	**Shoba Bandi-Rao, Ph.D**
	Discipline:	**Academic Literacy and Linguistics**
	Title:	**Linguistic Analysis of Prescription Drug Rexulti Commercial**
	Funding:	**Independent Study**
	In the United States, pharmaceutical companies are permitted to advertise prescription drugs directly to consumers on television, unlike in Europe where such advertising is banned. Although FDA regulations mandate that these ads explicitly state side effects, American drug companies employ sophisticated linguistic tactics to minimize the risks. This study conducted a linguistic analysis of Rexulti, a medication used to treat a host of depressive disorders. Using Praat, a speech analysis software, we measured speech rate and pitch levels for the speech used to state the benefits and risks. We found that a normal speech rate (how fast one speaks) was used in the message promoting the benefits of the drug (4.71 syllables per second), but a faster speech rate was used while stating its risks (5.4 syllables per second). Faster speech rate increases cognitive processing time, affecting the listeners' comprehension of the risks. As for pitch (the degree of highness or lowness of speech tone), a higher pitch female voice (mean-181.86 Hz) was used to discuss the benefits of the drug, which makes it easier for the listener to discern the words. In contrast, a lower pitch female voice (Mean- 132.08 Hz) was used to state the risks. Additionally, instances of raised voice pitch to emphasize certain words such as product name in the main message and the lack of pronoun usage in the warning to reduce personalization were observed. In conclusion, this study underscores the strategic use of linguistic strategies in shaping persuasive messaging in prescription drug commercials.	

56	Presenter:	**Filip Wojda**
	Mentor:	**Younes Benkarroum, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**Three Dimensional Reconstruction of Medical Images**
	Funding:	**CRSP**
	In the realm of medical imaging, our research focuses on enhancing the computational speed of series expansion methods like Algebraic Reconstruction Techniques (ART) for three- dimensional reconstruction of biological specimens from projections such as CT scans and MRIs. This endeavor is crucial as current transform methods like Filtered Back-Projection, while fast and simple, lack the detailed resolution that series expansion methods can provide, especially in cases of incomplete or noisy data. Employing Bresenham's line algorithm for simulating x-rays in 2D arrays and extending this to various angles, we've successfully labeled rays between 0 and 180 degrees and developed a rotation program for 2D arrays. Our approach also involved creating sinograms from custom-designed data that simulates the human body and using conventional back-projection algorithms for their reconstruction. While initial reconstructions showed detailed images, they were marred by blurriness, a limitation we aim to overcome with appropriate filtering techniques. By resolving these challenges, our research promises to make series expansion methods a faster, more detailed alternative to current transform methods, significantly benefiting surgical planning and medical research.	

Poster Session

Student Presenters Abstracts

Richard Harris Terrace, 2:15pm – 4:00pm

57	Presenter:	**Ghita Mountassir**
	Mentor:	**Younes Benkarroum, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**A Comparative Analysis of Traveling Salesman Problem Algorithms.**
	Funding:	**Independent Study**
	The Traveling Salesman Problem (TSP) remains a fundamental challenge in optimization, crucial for minimizing travel costs and time across various industries, notably logistics. Our research compares key algorithms for solving the TSP, such as the "Nearest Neighbor" and "Greedy Algorithm." While initial results favor the Greedy Algorithm, ongoing evaluation aims to determine its overall superiority. Through programmatic implementations and manual computations, we assess efficiency and effectiveness. Algorithms include the Nearest Neighbor, Greedy Algorithm, and Brute Force Method. This study seeks to provide concise insights into algorithmic performance for practical applications.	

58	Presenter:	**Asmaa Ait Hammou**
	Mentor:	**Younes Benkarroum, Ph.D**
	Discipline:	**Computer Information Systems (CIS)**
	Title:	**AI-Based Implementation and Comparison of Facial Detection and Recognition Algorithms**
	Funding:	**Independent Study**
	In recent years, artificial intelligence (AI) algorithms have driven significant advancements in Facial Detection and Recognition technology, revolutionizing computer vision across industries like security and human-computer interaction. This project evaluates state-of-the-art AI-based algorithms for facial detection and recognition, analyzing their capabilities and limitations. Comprehensive comparisons based on criteria such as gender, age, and skin color are conducted to identify algorithms suitable for diverse demographics. Using a dataset of thousands of images sourced from online repositories, Python serves as the primary implementation tool, facilitating a detailed exploration of facial recognition intricacies. By sharing our findings, we aim to contribute valuable insights to the field, aiding informed decision-making in the application and development of facial recognition technology.	

Special Thank You to Our Funding & Programs!

BFF
BMCC Foundation Fund
for Undergraduate Research

LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION
CUNY
NEW YORK CITY

CUNY RESEARCH SCHOLARS PROGRAM

Blackstone LaunchPad®

CITIZEN ENTREPRENEUR EXPLORERS

NEW YORK STATE STEP
SCIENCE & TECHNOLOGY ENTRY PROGRAM
preparing science, technology & licensed professionals since 1986