BULLDOG BYTE

TABLE OF CONTENTS

WELCOME

Warmest greetings to our wonderful community of students, faculty, alumni, newly transferred students, valued External Advisory Board members, and incoming first-year students ready to embark on an exciting fall journey! I am overjoyed to present you with the freshest tidings from our dynamic department. Our accomplishments have reached new heights this year thanks to our revered faculty's unwavering dedication, collaboration, and relentless hard work. Their commitment to upholding the highest standards is the pillar of our department's triumphs.

I'll kick things off with a few essential updates: Dr. Carl Goodman, our Provost & Vice President for Academic Affairs, has moved on, and Dr. Guy-Alain Amoussou is now filling in as the Interim Provost & Vice President for Academic Affairs. Meanwhile, Dean Acquaah continues his outstanding leadership of our College of Arts and Science.

We said goodbye to Dr. Sharad Sharma at the start of Fall 2022, but exciting times are ahead. Come AY 2023, we're looking forward to welcoming three new tenure-track faculty members - Mr. Avijoy Chakma, Dr. Kamruzzaman Sarker, and Dr. Appolo Tankeh. Make sure to read about them, beginning on page 13 of this newsletter.

Our student community continues to grow. We now have 410 students (332 undergraduates and 77 graduates), a solid increase of 75% and 25% in undergraduate and graduate enrollments since 2019, respectively. Plus, our graduation rate has jumped from 11 in 2019 to 34 in 2022. How awesome is that!

Our department has been in the limelight this year, bringing home several College of Arts and Sciences awards, including the following:
1. Dean's Outstanding Department: Department of Computer Science.
2. Dean's Outstanding Departmental Leadership: Rose Shumba.
3. Outstanding Publications: Dr. Ji.
4. Renowned Researcher: Dr. Josyula
5. Presidential Award: Dr. El-Sayed.

We even made it to **The New York Times** as an HBCU Computer Science powerhouse, and *Scripps News* recognized our commitment to diversifying the tech industry. One of our recent highlights brought international attention, toughing the heart of Karen Klasky, a resident of Switzerland. At 80 years young, Karen was deeply moved by our initiative of taking BSU students to the Grace Hopper Conference. Interestingly, Karen had once met Grace Hopper in person, and she graciously allowed us to share her touching email with our community. It reads:

I am writing to you from Switzerland, having read about your internship program in the international edition of The New York Times. *As a woman, I cannot possibly express my admiration for your initiative with your students and your commitment to helping women get both feet up into the world of technology in the business world. For me, and many others I am certain you rank as a "Great Teacher" or "University Scholar," as they are called at Columbia and Harvard. I was struck by your initiative to bring a group of students to the Grace Hopper Celebration and that you saw to it that no one would be left behind because of the cost.*

Many years ago I had the great pleasure to spend the day in Roma with Grace. My husband was an IT consultant and ran a conference in Rome, where we lived, to bring together top American IT managers to exchange ideas with top European and, particularly Italian IT managers. At each conference there was an important speaker from the US. Most speakers used the opportunity to bring their wives and have a bit of down time together in Italy. This was an all-day event and I always took their wives on my own tour of places in Rome that were special to me as a long time resident there.

One time the speaker was Grace Hopper. We always wined and dined our guest speakers and, at the dinner before the conference, Grace said that she had heard from others that these tours, on foot, were good fun and, as she had no husband with her, she would love to go on it. Needless to say I was delighted and honored to do it and we spent a whole days trudging around the inner city and I took her to many places that tourists don't usually go. We had a long Roman lunch together chatting as two women about the things that were important for women to do in their lives.

Afterward she wrote me a lovely thank you note for our delightful time together. I, too, especially enjoyed it and it is one of my happiest memories, as she was a terrific and down to earth person and we spent the day as two women on the town. I can assure you that, if Grace heard about your actions to help women enter into and succeed in the world of technology, she would be bursting with pride and happiness. As one woman far away to another, I thank you for what you are doing for all of us and I wish that like you and Grace, there were more like you. BRAVA ! *Sincere thanks to you.*

* * *

Additionally, I had the privilege of speaking about our exceptional programs at esteemed meetings and conferences. These included the 2022 Computing Research Association Conference at Snowbird and the Defense Summit in MD.

The latter explored the immense potential for computing research to positively impact humanity, while also emphasizing the responsibility to consider inherent risks. Another exciting opportunity was being part of the Hawaii's Computing Research Association Widening Participation Graduate Cohort Workshop, where I contributed to a panel on innovation collaboration, academics, and industry. During the 2023 Defense Summit in Annapolis, we discussed our partnerships, particularly BSU's involvement with the University Affiliated Research Center led by Howard University. Furthermore, I had the privilege of presenting on our partnership with IBM at the NIH Collaborative Models for Building Equality and Equity in Research Conference on July 19th.

We take immense pride in our community's achievements, and it brings us great joy to congratulate Dr. Josyula on completing the AWS Coding School Machine Learning Intensive Boot Camp. A special shout-out also goes to Dr. Josyula, Dr. Yan, and Dr. Bo Yang for receiving the UARC award through Howard University.

We have exciting news for the future! Starting January 2023, our department became part of the prestigious CyberCorps®: Scholarship for Service (SFS) program. Additionally, we are joining the esteemed Howard-led - University Affiliated Research Center (UARC).

Our alumni team deserves recognition for generously sharing their valuable experiences with our students. Their contributions are invaluable, and we express our heartfelt appreciation. We also extend a huge thanks to our External Advisory Board for their ongoing support and dedication. Please sure to sit back, relax, and enjoy learning about our exciting initiatives, and more about them in the later sections of this newsletter.

--Rose Shumba, Department Chairperson

DEPARTMENTAL NEWS

AN UNPRECEDENTED ACHIEVEMENT IN CYBERSECURITY EDUCATION

We're thrilled to announce that BSU has become the only Historically Black Colleges and Universities (HBCU) to secure funding for the CyberCorps Scholarship for Service Program. This groundbreaking initiative, generously backed by a $2.1 million grant from the National Science Foundation (NSF), aims to boost the volume and diversity of talented individuals in the governmental cybersecurity sphere.

BSU's Bulldog Cyber Scholarship for Service (SFS) Program is a comprehensive five-year plan. In 2022 it mentored, educated, and provided training to three of our Computer Science majors and two community college transfer students. Furthermore, these undergraduate students will participate in critical research while bolstering their technical prowess in crucial information infrastructure protection.

CURRICULUM ADVANCEMENTS

Our department's curriculum has evolved, with the Maryland Higher Education Commission (MHEC) approving our three new degree programs and two upper-division certificates. These include BS degrees in Data Science, Operations Engineering, and Software Engineering, plus Upper Division Certificates in Cybersecurity and Cloud Application Solutions. In addition, our faculty members are spearheading the development of an MS in Data Science program, currently under review for approval.

RESEARCH FUNDING AND RESEARCH LABS: EXPANDING OUR HORIZONS

Leading the vanguard of research funding, the Department of Computer Science proudly brought in $15.4M in AY 2022. Here are a few of the significant Department of Defense Awards we've received:

1. The Army Research Lab/University of Maryland's ArtIAMAS Project – Focus on Self-Adaptive Autonomous Systems.
2. Department of Defense STEM Education Consortium – A collaboration with RTI International and Prince George's County Public Schools.
3. National Security Agency/GTRI Project - Advancement of Autonomous Cybersecurity in Compromised Environments.
4. Army Research Lab's Project - Development of a Web-based Visualization System.

We're excited to announce that our department now boasts nine research labs. These include:

Security and Optimization of Stochastic Systems (SOPSS) Lab: The work involves investigating and establishing the structures in the interaction of intelligent agents with conflicting and mutually unknown motivations in stochastic systems. This problem manifests in optimization and security situations of computational, biological, and socioeconomic systems. NSA, NASA, NSF, and other agencies sponsor projects.

Autonomous Technologies Lab: Students and faculty work on goal- oriented and rule-based interfacing agents capable of adapting based on the anomalies they encounter, anomaly detection, and system adaptation from the perspective of Artificial Intelligence's data-driven machine learning side. The lab has several funded grants in collaboration with the University of Maryland, College Park, BAE systems, and several small businesses. The faculty and students have completed prior NSF, AFOSR, ONR, and DARPA-funded projects. Five doctoral students have graduated from the lab. Also, ongoing research on adaptive online classifiers, drift tolerance, meta-reasoning, federated learning, cooperative agency, knowledge acquisition, and handling conflicting information in autonomous settings form a strong foundation for doctoral students to build upon their dissertations. The University of Maryland's (UMD) five-year ArtIAMAS (AI and Autonomy for Multi- Agent Systems) cooperative agreement with the US Army Research Laboratory (ARL) funds current research.

Cybersecurity and Virtual Reality Lab: This research focuses on AI in Cyber Security Applications, Computer Graphics and Animation, 3D modeling and Visualization, Computer Vision and Pattern Recognition, Machine learning, and Human-Computer Interface. The research team includes one undergraduate student, eight doctoral students, and one postdoctoral researcher. NSF, DHS, DoD, NASA, and Adobe Research fund the research.

Intelligent Engineering Lab for Large Information: The lab has seven doctoral students working in cybersecurity, data privacy and reliability, Big Data, IoT Edge Computing, Natural Language Information Retrieval, and Machine Learning. NASA, NSF, DoD, and industry, including Radiant and Adobe Research, fund the research.The research has generated academic publications as well as software packages. Two of the doctoral students successfully defended their dissertations. They received a Research Award from the Graduate School and the 2019 Distinguished Engineer of the Year by the National Society of Black Engineers.

Biomedical Informatics Lab: Faculty and students work on analyzing data in various domains, including network/cyber security, human emotion recognition, stress detection, and medical and health, by integrating machine learning (ML), visual analysis, and signal processing. Current research is NSF funded in collaboration with Old Dominion University. Former research was funded by the US Army Research Office (ARO). The lab also collaborated with the US Army Research Laboratory (ARL), Indiana University, Coastal Carolina University, University of the District of Columbia, and Virginia Tech University.

Cyber-physical Systems and ML Lab: Faculty and students work on machine learning for thoughtful, intelligent, and cyber-physical systems research. The research involves studying the relationship between human activities and underlying cognitive health impairment; The research covers extracting remote photoplethysmography (rPPG) from facial videos, deploying real-time IoT systems for rPPG, sports analytics, developing interoperable and fault-tolerant networks for ground and aerial robots in contested environments for resource optimization, and model-based systems engineering for cybersecurity. One of the projects is funded by NAVAIR, and other projects are financed by The University of Maryland's (UMD) five-year ArtIAMAS (AI and Autonomy for Multi- Agent Systems) cooperative agreement with the US Army Research Laboratory (ARL).

The Center for High-Performance Information Processing (CHIP): The lab research focuses on High-Performance Computing (HPC). CHIP includes several collaborating prominent faculty spanning many other applications domains in HPC; parallel programming and parallel algorithms partitioned Global Address Space (PGAS) programming and algorithms for application acceleration using Graphical Processing Units (GPUs) and Manycore Chips, such as the Intel Phi. CHIP also focuses on sequencing large databases of DNA through a DNA Barcoding Initiative to sample, identify and classify species. Seven graduate students are working in this lab.

A DAY AT ELIZABETH CITY STATE UNIVERSITY

STEM Complex at Elizabeth City State University, Elizabeth City, NC

On August 24, 2022, Dean Acquaah, Dr. Josyula, Dr. Ramamurthy, and Dr. Shumba took a trip to Elizabeth City University. We went to learn about their Department of Aviation & Emergency Management, especially their program in Unmanned Aircraft Systems (UAS).

Dr. Kuldeep Rawat, Thorpe Endowed Professor and Dean of the School of Science, Aviation, Health, and Technology, told us about how they started the UAS program in 2019. It's been really successful and has become a flagship program for the university. We hope to start a similar program at our school, so it was great to learn from them.

We also got to tour their cool labs. There was one where they practice with drone simulations, and another where students actually build their own drones. They showed us different kinds of drones for various uses, including farming.

Dr. Ramamurthy and Dean Rawat during our tour, and Dr. Josyula in a flight simulator.

Another interesting stop was the cyber-drone lab, where they research how to protect drones from hackers. We wrapped up the visit at the UAS Pavilion, an outdoor area where they test the drones. The trip was a big learning experience for us, and we're excited about bringing some of what we learned to our university.

--Rosemary Shumba, Chairperson

OUR PARTNERS AND EXPERIENTIAL LEARNING

University Affiliated Research Center (UARC)

We are excited to work with Howard University on the University Affiliated Research Center (UARC) project. This unique collaboration epitomizes the extraordinary potential of HBCUs in spearheading advanced research initiatives. Dr. Josyula, Dr. Bo Yang, and Dr. Yan from our faculty contribute to this project, which primarily focuses on tactical autonomy and has significant implications across various sectors, notably defense, and cybersecurity. The UARC project provides an excellent platform for students, faculty, and researchers to partake in leading-edge research, enhance their practical skills, and make lasting impacts on their respective fields. This project currently engages three faculty members, four post-doctoral researchers, six doctoral students, and three undergraduates.

Hopkins Morgan HBCU Consortium (HMHC)

In association with the Hopkins Morgan HBCU Consortium (HMHC) and NIST's Professional Research Experience Program (PREP), we offer real-world research opportunities for our university's students and academic affiliates at NIST's eminent Gaithersburg campus.

We've also partnered with the **University System of Maryland at Southern Maryland** to widen access to computer science education. This alliance allows students in the Southern Maryland region to pursue a computer science degree without requiring long commutes. In line with our commitment to inclusivity, this partnership brings quality education closer to those in underserved areas.

EXPERIENTIAL LEARNING OPPORTUNITIES

We've fostered relationships with several Maryland-based startups, providing our students with mentorship and fueling their entrepreneurial spirits from early on. This cooperative effort extends beyond typical internships, including project collaborations and potential job opportunities. Last year, we placed 30 students in startup internships, while around 85 students are involved in such programs this year. We owe this significant increase to our dedicated partners and grant funding.

Faculty-Mentored Research

Under the Summer Undergraduate Research Institute, several teams of three to five students are guided by seven faculty members. These students are granted a summer stipend, and the faculty's involvement is greatly appreciated.

Capstone Projects with Booz Allen

The collaboration with industry leader Booz Allen on meaningful capstone projects brings us great satisfaction. These projects enable students to address real-world challenges under expert mentorship, equipping them for the industry's demands. This effort has yielded positive outcomes, as several recent graduates have secured employment offers from Booz Allen.

Battelle Internships

In association with Battelle, BSU's year-round internship program engages an average of 10 students annually. This provides invaluable hands-on industry experience.

Conference Opportunities

Our students also have the opportunity to attend industry conferences like Grace Hopper and BEYA, offering them networking opportunities and exposure to the latest industry trends. Six students who attended the Grace Hopper conference secured job offers, underscoring the importance of these platforms.

Financial Assistance Program with Cvent

In partnership with Cvent, financial assistance can be provided to students who secure jobs at the company. Currently, five students are working for Cvent under this program.

OUR EXTERNAL ADVISORY BOARD

MS. TINA C. WILLIAMS-KOROMA, ESQ., CISSP, PMP. Chair of External Advisory Board and a serial entrepreneur – Founder/CEO of TCecure, and most recently, Founder of CyDeploy (https: / www.cydeploy.com). She is a Maryland licensed attorney and possesses a BS in Computer Science from the University of Maryland Baltimore County (UMBC), a MS in Management from Rensselaer Polytechnic Institute, and a JD from the University of Maryland Francis King Carey School of Law. This cybersecurity expert is extremely community-minded, having partnered with local institutions and contributed to several boards. Tina Williams-Koroma is excited about her entrepreneurial ventures, and looks forward to continued growth, as she continues to equip the next generation of cybersecurity experts by supporting Science, Technology, Engineering, Arts, and Mathematics (STEAM) education initiatives.

MS. BAHIRAH ADEWUNMI. Bahirah is a cyber and analytics thought leader and Lead of Booz Allen Hamilton's Black Analytics Group (BAG). BAG which develops research and engagement projects devoted to the advancement of equity and inclusion in and via STEM. She designed and led the execution of Booz Allen's Historically Black Colleges and Universities (HBCU) Capstone Initiatives to establish mutually beneficial partnerships with HBCU STEM departments and dynamically engage underserved STEM talent. Bahirah is a Certified Ethical Hacker and works as Advanced Data Scientist and Researcher within Booz Allen's Chief Technology Office (CTO). She is a multi-coastal transplant by way of Oakland, California; Atlanta Georgia; and Bronx, New York and holds degrees from Cornell University and Carnegie Mellon University. She's an avid wiener dog mom, cook, outdoor gardener, Pittsburgh Steelers fanatic, and collector of orchids and Lego sets.

DR. WILLIAM BUTLER. Seasoned technologist and educator with over 30 years of solid IT industry experience, both civilian and military. Held challenging positions in education, Information Assurance and Strategic C4I. Doctoral research focused on countering illegal cell tower surveillance.Experienced in strategic IT operations and planning. Specialties: Network Planning and Assessment, Information Assurance, Wireless Networking (4G/5G and WIFI), Contributor to the Federal Enterprise, Architecture Framework Version 2.0. (FEAF v2), Contributor to NIST Cloud Computing Security, Working Group Security Reference Architecture (SRA) and NIST-SP 500-291, NIST Cloud Computing, Standards Roadmap , CSFI Board Member, Reviewer Broadband Telecommunications Opportunity Program (BTOP) Department of Commerce (DoC).

DR. JOSIAH DYKSTRA. Technical Director and member of the Senior Executive Service, National Security Agency's Cybersecurity Operations Organization.

DR. AARON FERGUSON. Technical Director, Cryptographic Solutions Office, National Security Agency (NSA). Dr. Ferguson is a Senior Executive Technical Director for the National Security Agency where he drives the planning, analysis, development, and operation of high assurance cryptographic solutions as well as the use of commercial solutions to protect classified information. He is also responsible for the application of Data Science and Machine to NSA cryptographic solution mission.

DR. MOSES GARUBA. Associate Dean for Academic Affairs, College of Engineering and Architecture (CEA), Howard University.

DR. SEAN GUILLORY. Sean Guillory attained his Ph.D. in Cognitive Neuroscience from Dartmouth College where he primarily worked with neurosurgery patients to help improve the mapping for brain functions that were personally important to their lives. He is also a proud member of the Information Professionals Association, the Mind Science Foundation's Science Committee, and a Thematic Task Force lead for the National Science Foundation's Engineering Research Visioning Alliance (ERVA). After taking that experience to help build up a start-up business incubator aimed at helping humanity (Fruition Tech Labs) and working on data science efforts to help catch online scammers (Consumer Affairs), He now focuses on ways of utilizing his background in automation, biometrics, and social science methodology to help with issues within Defense and National Security.

MR. DAN HIGGINS. Technical Director (Engine) at BioWare. Dan is a seasoned technical leader with a wealth of experience in the gaming and technology industries. Dan serves as Technical Director (Engine) at BioWare, a studio under the Electronic Arts umbrella, and helps drive innovation in the AAA gaming space. With a background that includes serving as a Technical Director, CTO, Principal Software Engineering Manager, and co-founder of multiple companies, Dan is well-versed in the intricacies of software development and architecture. Dan is also an accomplished speaker and author and has made a name for himself as an expert in gaming, simulation, finance, R&D, AI, streaming, and performance. Prior to joining BioWare, Dan led the simulation team at Microsoft's Studio Alpha, where he was instrumental in building a high-performance, headless, distributed, and deterministic C++ simulation engine to tackle complex global problems at scale. An avid teacher, Dan is passionate about sharing his decades of experience in programming, innovation, gaming, and performance with others, helping them see that nothing is impossible or out of reach.

MS. PAMELA K. ISOM. Business Technology Executive, Walden University Executive leader in artificial intelligence including ethics, strategy, governance, test and evaluation and risk management; emerging technology strategy and roadmap development; and cybersecurity compliance. Blends AI, cybersecurity and climate resilience, advising and establishing policy and practices that strengthen critical infrastructure and national security. Former US Government Senior Executive known for instilling equity into futuristic technology principles and practices to prevent societal harm, leads organizations through responsible innovations and International Organization for Standardization (ISO) risk mitigations. Coach, mentor, and change-agent who provides thought leadership in collaboration with professionals, industry leaders, and academia. Inventor and recipient of numerous patents and author of a book and several publications. Strong energy advocate, business entrepreneur and Chief Innovation Officer.

DR. LASHKAR KASHIF. Senior Director of Data Science, Cvent. Data scientist, thought leader and team leader with 10 years of experience beyond Physics PhD. Expert in machine learning and data product design & delivery, passionate about data storytelling and data science team building.

DR. RISA LIN. Managing Principal of Vigenère Technologies, a consulting company that advises Aerospace & Defense companies and Federal Contractors on strategic technologies that will transform their supply chain and manufacturing operations to increase resilience, improve efficiency, and make better use of data for rapid decision making. Previously, she was the Vice President of A&D Industry & Solution Strategy at Infor, where she helped guide the development of their cloud-based ERP platforms to meet the business process and security requirements of the defense industry. Prior to Infor, Risa was a cyber systems architect at Northrop Grumman, focused on big data solutions for logistics and intelligence missions. She received her Ph.D. from Georgia Institute of Technology, with a thesis focused on real- time, closed loop methods for neural electrophysiology experiments.

MR. WREN SIGREST. Cyber Business Line Manager at Battelle. The Cyber Business Line is comprised of three divisions: Cyber Solutions, Microelectronics Trust and Analytics, and Mission-Focused Tools. He oversees this rapidly growing organization of more than 230 employees responsible for developing and delivering innovative embedded cyber solutions for a largely business sensitive customer base. Under Wren's leadership the cyber business line has expanded to multiple regional locations in Ohio, Virginia, and Florida. Wren came to Battelle from Lockheed Martin where he spent twenty-three years serving multiple IC agencies and the DoD leading portfolios of medium to large programs. Wren has extensive experience as a Capture Manager with a demonstrated ability to grow business across Science & Technology and Information Technology programs. Wren is a graduate from the University of Virginia with an M.S. in Applied Mechanics and a B.S. in Civil Engineering.

DR. MASSOOD TOWHIDNEJAD. Professor of Software Engineering, Department of Electrical Engineering and Computer Science at Embry-Riddle Aeronautical University. His research interests includes; STEM education, software engineering, software quality assurance and testing, autonomous systems, and Air Traffic Management.The results of his research have been published in over one hundred twenty technical reports, journal articles, book chapters, and refereed conference papers. Throughout his career, he has contributed to the Software and Systems Engineering profession by serving as an author for the Graduate Software Engineering Reference Curriculum (GSwE2009), the Software Engineering Competency Model (SWECOM 2014), the Graduate Reference Curriculum for Systems Engineering (GRCSE), and as a subject matter expert for IEEE Certified Software Development Associate (CSDA) training material. He is the co-author of the "Software Engineering Practice: A Case Study Approach" textbook. In addition to his university position, he has served as a Visiting Research Associate at the Federal Aviation Administration, Faculty Fellow at NASA Goddard Flight Research Center, and a Software Quality Assurance Manager at Carrier Corporations. He is a senior member of the IEEE, a former ABET CAC Commissioner, and current ABET CAC/EAC Program Evaluator closed loop methods for neural electrophysiology experiments.

DR. PAUL WANG. Professor and Chair, Department of Computer Science, Morgan State University.

NEW FACULTY BIOS

DR. KAMRUZZAMAN SARKER

Md Kamruzzaman "Zaman" Sarker has previous experience as an assistant professor at the University of Hartford. Before joining the University of Hartford, he was a postdoctoral fellow at Kansas State University. He earned his B.Sc. in Computer Science and Engineering from Khulna University of Engineering & Technology, M.Sc. in Computer Science from Wright State University, and Ph.D. in Computer Science from Kansas State University. He also worked for several industries, including Intel, Accenture, and Samsung.

His research domain spans the broad field of artificial intelligence and its application. Some specific topics he is focusing on now include but are not limited to artificial intelligence, deep learning, trustworthy artificial intelligence, application of deep learning, cybersecurity enhancement using deep learning, and high-performance computing, semantic web.

MR. AVIJOY CHAKMA

Avijoy Chakma is a Ph.D. candidate in the Department of Information Systems at the University of Maryland, Baltimore County. He received a Bachelor of Science degree in Computer Science and Engineering from the Bangladesh University of Engineering and Technology (BUET) in 2013, and a Master of Science degree in Computer Science from Lamar University, Texas, in 2018. Prior to his graduate studies, he had 2.5 years of experience working in the software industry in Bangladesh.

Avijoy is a member of the Mobile, Pervasive and Sensor Computing (MPSC) Lab at UMBC. He has actively collaborated with multiple internationally recognized campuses and has published multiple peer- reviewed journals and conference papers. He is the recipient of the Best Paper Award at the IEEE/ACM CHASE Conference 2022. His research focuses on developing scalable algorithms for multi-stream

data processing, and his overall research interests are in the areas of cyber-physical systems, smart health, cyber security, and applied machine learning.

DR. APPOLO TANKEH

Appolo Tankeh has previous academic experience as a university lecturer and adjunct professor at universities in London, New York, and Maryland. He held a number of US patents in HPC (High Performance Computing). His current research areas are blockchain, Web3 programming, Docker/ Container based systems, Cloud computing, High Performance Computing, message passing, File systems, operating systems and networks.Topics include concurrency, databases, computer/ processor architecture, distributed systems, programming languages, compilers, Browsers, algorithms, Quantum Computing, Statistics and Probability theory.

Dr. Tankeh, *continued*

Tankeh has been a research assistant at the Computer Laboratory of the University of Cambridge and the Computer Science Department at University College London, where he worked with AI PhD students. In Cambridge, he worked on operational system, hypervisor firmware and the application of queuing system to message passing.

Dr. Tankeh is an artificial intelligence (AI) expert with many years of experience leveraging AI to solving problems in research, systems, security, business and finance organizations, and the competitive analysis of financial performance of firms.

After Cambridge/UCL, Tankeh became a computer scientist with IBM in New York, where we worked for over 20 years. He was one of the original members of the High Performance Computing (HPC) dream team of engineers who created the ASCI Purple supercomputer installed at the Lawrence Livermore National Laboratory in Livermore, California, in 2005. ASCI Purple was a $290M partnership between Lawrence Livermore and IBM for the U.S. Department of Energy/National Nuclear Security Administration /Advanced Simulation and Computing Program. He earned his MS and Ph.D. in Electrical & Computer Science from Imperial College London. He also has obtained MBA in Management from MIT, Sloan School of Management.
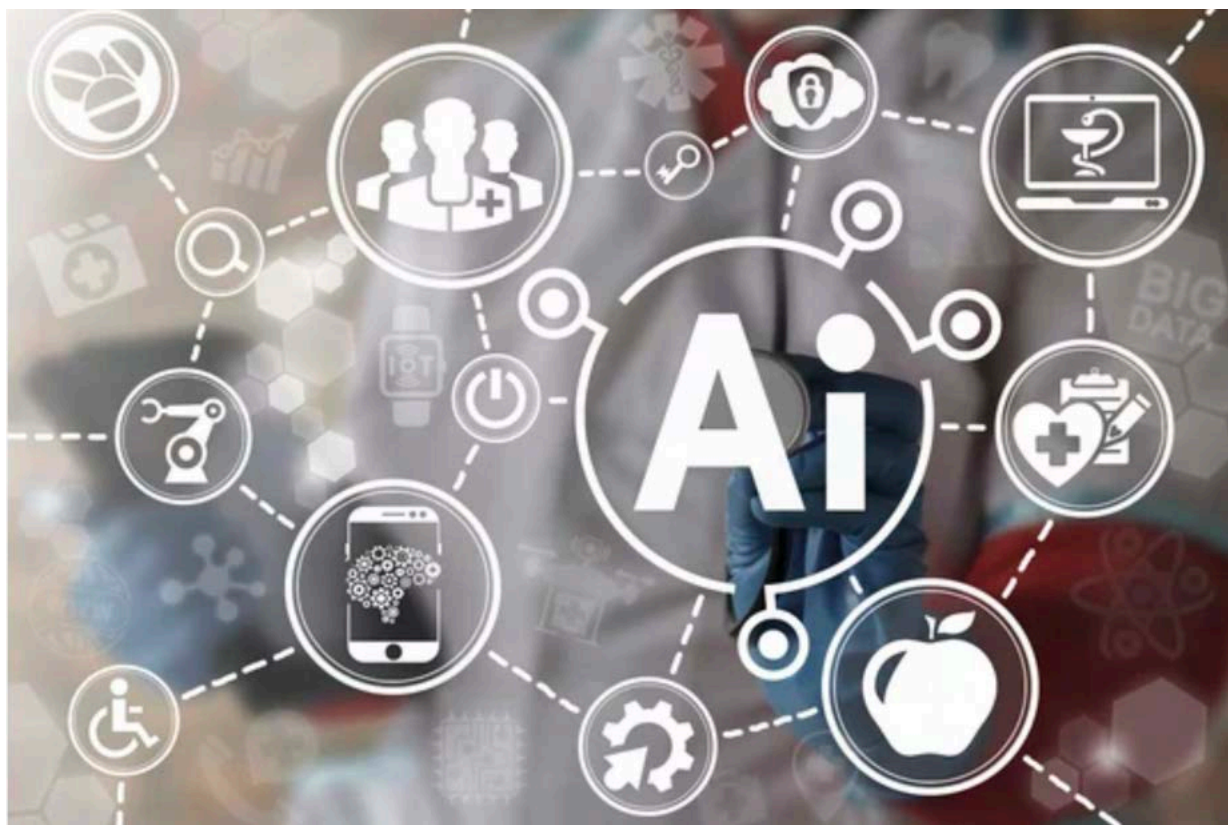
DOCTORAL PROGRAM UPDATE

To further strengthen and augment the rigor of our doctoral program, we have implemented several significant curricular improvements. These have been crafted to align with the increasingly specialized demands of our students' research areas.

The knowledge areas have been streamlined and expanded to address core topics, such as Data Science, Artificial Intelligence, Machine Learning, High- Performance Computing, and Cyber Security. This is reflected in our newly established research labs, which have added fresh research dimensions to the program.

The nine-credit requirement for selected topic 800-level courses now encapsulates any regular 800-level course. This ensures a broader selection for students, allowing them to delve deeper into their knowledge areas. Furthermore, to emphasize the practical application of their studies, students must publish at least two papers in IEEE or ACM-sponsored conferences before their final dissertation defense.

The comprehensive examination has been meticulously revised to encompass a main knowledge research area and one or two supporting knowledge areas. Focusing on upper-level courses has facilitated a more thorough evaluation of students' research knowledge, fostering critical and innovative thinking.

To aid in our students' preparation for the comprehensive exam, we've initiated several boot camps that provide a rigorous, focused review of the course materials. Below is a summary of the boot camp participation:

COSC 618: 5 students
COSC 631: 5 students
COSC 645: 8 students
COSC 673: 7 students
COSC 719: 9 students
COSC 735: 10 students
COSC 750: 8 students
COSC 831: 4 students
COSC 887: 11 students

Feedback received from participants indicates that the boot camps functioned effectively as crash courses, providing in-depth reviews and valuable preparation for the comprehensive exams. Of the seven students who sat for the comprehensive exam following the boot camp, six successfully passed.

Doctoral Program Coordinator

Dr. Hoda El-Sayed

We believe that these curricular enhancements, the introduction of new research areas, and the supportive measures we've put in place, such as the boot camps, are fostering a more robust, practical, and versatile learning environment for our students, setting them up for success in their academic and professional journeys.

ALUM ACHIEVEMENT & INVOLVEMENT

Chidubem Ezinne was born and raised in the DC/MD area. He graduated from Bowie State in 2020, earning his degree in a relevant field. Chidubem currently works as an Associate at Goldman Sachs, where he is a valuable member of the Consumer Risk Engineering Team. With his expertise and dedication, Chidubem has been involved in billion-dollar deals, and his contributions have helped drive the success of his team. He is passionate about his work and is committed to delivering exceptional results for his clients. Chidubem's professional accomplishments and expertise in the field have earned him recognition from his colleagues and industry peers alike.

Alexia "Lex" Crumpton is a Principal Cybersecurity Engineer –SOC and Blue team for the MITRE Corporation. Lex is a multi-functional leader whose current work spans various exciting efforts involving security operations and research, specializing in defensive countermeasures and heuristic behavior analysis. She leads teams that help shape and deliver cyber analytics, mitigations, and detections within MITRE ATT&CK®, the Center for Threat-Informed Defense, and ATT&CK Evaluations. Lex previously worked as an Exploitation Developer, Windows Blue Team/Threat Hunter analyst, Malware Reverse Engineer, and lead DFIR analyst. Lex holds a M.S. in Cybersecurity from University of Maryland, Baltimore County (UMBC) and a B.S. in Computer Science from Bowie State University. Her personal mission is creating defensive solutions for the everyday user to understand and showing representation of technical women within the cybersecurity field to make a positive impact on youth.

Leo Genota graduated from Bowie State University in Spring 2020 with a bachelor's in computer science. After graduating, Leo Genota spent a couple of years as a government contractor for the Intelligence Community working in a Full Stack Software Engineering role. Currently, He is currently pursuing his master's degree in computer science at James Madison University, and Leo Genota is a Software Engineer at Microsoft

Daniel Francois III has been in his career for a little over two years. As a cloud software engineer, His focus is on back-end development with some experience in DevOps. He holds certifications in A+, Security+, and AWS Dev Associate. Some common technologies he uses are AWS EC2 and DynamoDB, Elasticsearch, Kubernetes, and Docker.

ALUM INVOLVEMENT

These six alum returned to the Department to share their experiences on transitioning into the workplace and negotiating salaries.

Isaiah Gregory is a Bowie State University alum with a Bachelor's of Science degree in Computer Science. He currently serves as a Program Manager at Microsoft and has prior experience as a Full Stack Developer for Booz Allen Hamilton. Isaiah holds an Active Top-Secret Clearance and has worked as a Software Engineer Intern for Johns Hopkins Applied Physics Lab. Additionally, he was a Computer Science Tutor at Bowie State University. With a strong background in JavaScript, Java, TypeScript, NodeJs, and Angular, Isaiah also holds certifications as an Amazon Web Services Cloud Practitioner and is Microsoft Certified in Azure Fundamentals.

Jonathan Moody currently works as a software engineer at IBM in the federal division. He has done full-stack, cloud development, and develops so far. Jonathan is a 2020 Computer Science graduate. He holds certifications in Python, DevOps Essentials, AWS Certified Solutions Architect, IBM Agile Explorer and Google cloud engineer.

Success Stories

FURTHER SUCCESS

Michael Stewart, a recent graduate of Bowie State University, reflects on his educational journey. Having transferred from Hampton University to Bowie State, he experienced significant growth in his technical expertise during his time there. While initially proficient only in Java, he expanded his proficiency to encompass languages such as C++, C, JavaScript, Python, SML, and ReactJS. Through classes and workshops, he explored a wide array of areas of interest, including Artificial Intelligence, AWS cloud, Web development, and Mobile development. He has completed three remote internships with Oracle, where he worked on Oracle Cloud Infrastructure projects, and also undertook a local internship with Generali Global Insurance. During his final semester, he engaged in impactful research with NAVAIR, contributing to the simplification of the risk assessment process through Model-Based System Engineering. With his enriched skill set and experiences, Michael is poised for his next venture. He is set to embark on a full-time role as a software engineer at Oracle, where he'll continue to apply and expand upon the knowledge he acquired during his time at Bowie State University.

Airrund Woolen's journey at BSU began as a freshman, joining from Charles Herbert Flowers with a strong background in computer science from the Science and Tech program. His skills allowed him to test out of the intro computer science class and even secure a job maintaining the computer science department section of the university's website.After a year with the department, Airrund ventured into the industry, collaborating with Millennium Corporation on a browser extension project with fellow students. Subsequently, he seized a valuable opportunity to work with Amazon for a summer, gaining valuable experience and enhancing his resume. Continuing to excel, Airrund joined Cvent for a flexible co-op program during the fall and spring semesters while attending school full-time. Concurrently, he pursued a Top-Secret government clearance for a potential role in cyber security with the Marines, although he eventually decided not to accept the position for the upcoming summer. Instead, Airrund chose to work with Oracle during the summer, contributing to their Food & Beverage business unit catering to renowned companies like Starbucks and Dunkin' Donuts. His impressive performance during the program led to a full-time job offer after graduation, which he gladly accepted.

Dejai Brown, a senior Computer Science student at Bowie State University, traces her journey back to Charles Herbert Flowers High School, where she thrived in the Project Lead The Way engineering program, nurturing her passion for STEM. This passion eventually led her to pursue a Bachelor's degree in Computer Science.

Throughout her time at BSU, Dejai has honed highly marketable skills in software development and cyber security through diverse experiences such as coursework, internships, research, club activities, competitions, and conference participation. Engaging in malware research with Mississippi State University and completing internships in cybersecurity with the United States Marine Cyber Command and the global nonprofit Battelle have broadened her expertise.

Dejai's involvement in various tech competitions has yielded notable achievements and awards, showcasing her dedication and talent in the field. Collaborating with the United States Cyber Command earned her a top-secret security clearance, a valuable asset for her future career.

Grateful for the opportunities she has explored at Bowie State, Dejai's hard work and dedication have already garnered a prospective job offer, leaving her excited and eager for what lies ahead in her promising journey.

Ashanti Boone, a determined and accomplished individual, made a significant impact on her technology career when she transferred to BSU last year. Guided by the department chair, Rosemary Shumba, Ashanti overcame her fear of rejection and pursued a summer internship, despite lacking technical experience. This effort led her to secure an impressive internship as a Cyber Software Engineer Intern at Northrop Grumman. Working in an Agile development environment, Ashanti collaborated with a team of interns and experienced software engineers, contributing to the development of a testing agent and a prototype Test Framework for superconducting Microelectronic devices.

During that transformative summer, Ashanti's dedication and potential were recognized as she received both the Thurgood Marshall College Fund/Palo Alto Networks Cyber and Adobe/Bowie State University Bold Futures scholarships. Back at school, Ashanti continued to thrive as a research assistant under Professor Ji, delving into the use of Term Frequency-Inverse Document Frequency (TF-IDF) analysis combined with Artificial Intelligence to analyze dementia. Presenting their findings at the Research and Innovation Expo in April 2023 showcased her growing expertise.

The fall semester brought new opportunities for Ashanti as she participated in prestigious programs such as the Girls Who Code Leadership Academy and the HBCU 20x20 and Adobe Fellowship. In the Women in Computer Science club, she attended the renowned Grace Hopper conference, where she received a job offer. Additionally, Ashanti's dedication to mentorship was evident as she guided first-year students in WICS research clusters, and actively contributed to the club's volunteer committee, organizing events like game nights and outreach to Bowie High School. Her journey reached new heights when Ashanti was selected as one of the 75 scholars in the TMCF Apple HBCU program. This prestigious program will offer her an opportunity to intern as a hardware engineer in Austin, TX, along with a substantial scholarship and an immersive experience at Apple's headquarters in Cupertino.

As she continues to excel and explore her potential in the tech field, she exemplifies the qualities of a successful individual ready to make a significant impact in her chosen career path.

Ashanti's Accomplishments
Internships, Scholarships, and Fellowship
- Apple/HBCU Scholar Program
- Hardware Engineer Intern in Austin, TX on the Analog Mixed Signal
- Team
- $15,000 scholarship
- A week-long immersive experience in Cupertino, California where I learned about the expectations of the internship and met fellow scholars Scholarships
- Thurgood Marshall College Fund/Palo Alto Networks Cyber Scholar
- (Featured in an article)
- Adobe/Bowie State University Bold Futures scholarship

Organizations
- Women in Computer Science club
- Grace Hopper Attendee: Received internship offer from Lockheed Martin
- Volunteer Committee: Helped plan Game Night and Bowie High School outreach
- Research Clusters: Mentor first years who are researching Cryptography
- Research Assistant: Work with Professor Ji to analyze dementia forum posts using Artificial Intelligence and Term Frequency-Inverse Document Frequency (TF-IDF). Presented findings at Research and Innovation Expo in April 2023.

Programs
- Girls Who Code Leadership Academy: Completed a give-back project where I interviewed Women in STEM and had them share their summer experiences and posted the interviews on TikTok.
- HBCU 20x20 and Adobe Fellowship: Learned about Adobe, participated in Mock Interviews, and received an internship offer from Adobe.

Calvin Caleb Amiolemen: The Morgan Hackathon Report

Calvin-Caleb Amiolemen couldn't believe he was part of the first-ever Annual Hackathon at Morgan State University. It was an amazing experience that would forever be etched in his memory.

The event saw 55 participants and 18 teams. Initially, eight individuals formed two groups of four. Calvin teamed up with Chenilyn, Eddy, and Ekene to develop the product they called"Numerous Idea," aiming to help those struggling with language barriers. Meanwhile, another group consisting of Tobi, Praise, Nelson, and Melanie created a product called "UNA."

As the event progressed, some of the participants were in need of teams, and that is when Calvin-Caleb and his teammate Chenilyn and were paired with two other Morgan State University students, and worked together to bring their visions of the Autonomous Analytical Camera to life. Meanwhile, Eddy and Ekene teamed up with a Morgan State University student and a Montgomery student to develop Transit Tech.

Throughout the hackathon, they realized the value of helping each other out and learning from the exceptional pitching skills of the Morgan State University students. This humbling experience taught them the importance of collaboration and support in achieving success. Amid fierce competition, Calvin's team emerged as one of the top five finalists out of the 18 teams. They felt elated and grateful for the opportunity to showcase their product before the judges. The event was a dream come true, filled with memorable moments, like sharing core memories and enjoying cup stacking activities. Calvin was glad to have been part of such an extraordinary experience.

In conclusion, participating in the Annual Hackathon at Morgan State University humbled Calvin. It provided an opportunity for learning, growth, and connection with like-minded individuals. The famous quote, "Alone we can do so little, but together we can do so much," resonated with him, a lesson he will carry with him throughout his life.

Eddy and Ekene - https://devpost.com/software/transit-tech
Praise, Tobi, Nelson and Melanie - https://devpost.com/software/una-ob028d
Chenilyn and Calvin - https://devpost.com/software/autonomous-analytical-camera-aac

Calvin-Caleb Amiolemen has been involved with Cvent and Baltimore Gas and Electric (BGE). He is a recipient of the Baltimore Gas and Electric Scholarship. He also accomplished the development of a self-driving car using JavaScript and crafted a Skatepark VR Environment in Vizard. He serves as a Major League Hacking Ambassador and has qualified as an EIC Bulldog Pitch Qualifier twice. Additionally, he secured the first place in the Bowie State University Public Health and Informatics Technology Capstone.
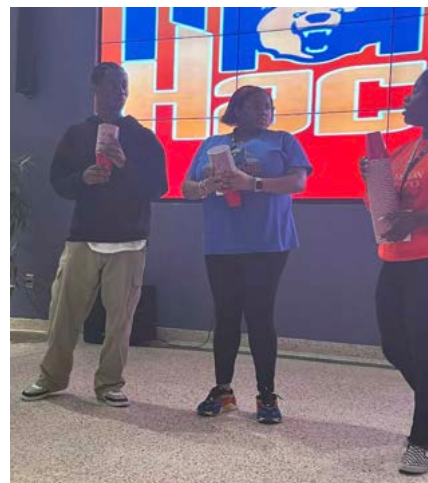
Roxan Rockefeller is an active participant in multiple clubs on campus, including Bulldogs Coder Club, Women in Computer Science Club, Women in Research Club, and recently, the Cybersecurity club. In the past, they had a valuable internship experience as a Software Engineer with Tata Consultancy Services (TCS). One of the highlights of Roxan's journey was attending the 2022 Grace Hopper Conference, where they had the opportunity to connect with other women in STEM and interview with various companies. This experience led to three impressive job offers from Eli Lilly, Citibank, and McDonalds. They have chosen to intern with Eli Lily as a Data Analyst Intern for the upcoming Summer of 2023.Furthermore, Roxan is giving back to the community by mentoring other female computer science majors in a research project.

Srinivasa Kranthi Kiran Kolachina has always been drawn to Mathematics and Science. It was only natural for him to end up doing research related to those fields. Mr. Kolachina is a doctoral student in the Department. He works as a graduate research assistant in the Computational Perception and Animation Laboratory (CPAL) under the supervision of Dr. Jie Yan. Mr. Kolachina is also an intern for Adobe as a Cybersecurity Engineer. Prior to joining BSU, Mr. Kolachina received a Dual Master of Science in Electrical Engineering with emphasis on Signal Processing and Radio Communications from Blekinge Institute of Technology, Sweden. His master's thesis focused on the development of the patented algorithm for 2-Dimensional (2D)-Differential Pulse Code Modulation (DPCM). Additionally, he has contributed to machine learning and data science by participating in projects such as the "Classification of vegetation and forest region" and "Road analysis."Kolachina brings this same enthusiasm to BSU where he engages in several NSF and NASA funded projects for CPAL. He has two publications with the CPAL group and is currently working on his third.

Eddy Koundjou is a driven and accomplished Computer Science senior with a passion for empowering his peers and advancing his field. Dedicated to the growth and development of BSU, Eddy actively seeks out resources to enhance the university experience for his fellow students. One of his main objectives is to support his peers in their academic journey. Recognizing the challenges that Computer Science students often face, he is currently working on developing a comprehensive Computer Science guide to help navigate the intricacies of college life. Through this guide, he aims to provide valuable insights and advice that will empower students to succeed academically. His dedication and hard work have been recognized through various scholarships. Notably, he has been awarded the prestigious Deloitte Emerging Leaders Scholarship and the TMCF Access Scholarship, which not only serve as a testament to his academic achievements but also open doors for further growth and opportunities. In pursuit of practical experience and industry knowledge, Eddy has secured internships with renowned companies such as Deloitte, Adobe, and is currently contributing his skills at Amazon. These experiences have allowed him to apply his classroom learning to real-world scenarios, honing his abilities and expanding his professional network.While his career goal is to specialize in cybersecurity, his broader ambition lies in elevating the Computer Science program at Bowie State University to new heights. He envisions the program as one of the leading Computer Science programs among Historically Black Colleges and Universities (HBCUs). By leveraging his knowledge, skills, and connections, Eddy strives to contribute to the growth and recognition of the program, positioning it as a hub of innovation and excellence. Eddy Koundjou exemplifies a driven and ambitious individual who is determined to make a lasting impact on the Computer Science community at BSU and beyond.

Aron Bishop is a senior undergraduate at Bowie State University, majoring in Computer Science. His academic interests are primarily in machine learning and embedded systems, with a focus on their application in cybersecurity. Furthermore, Aron Bishop completes undergraduate research with Dr. Soo-Yeon Ji in Analyzing Test Based on Dementia Blog Posts.

He is a competitive and studious student that achieved and been recognized for academic excellence. Specifically, Aron Bishop has made the Dean's List three times, Earned 1st Place in the Fall 2021 BSU Verizon App Showcase, and earned 1st Place Presenter at BSU Research Innovation Conference in Spring 2023.

Beyond academics, Aron Bishop is a part of the Army Officer Reserve Training Corps (AROTC). He participates in the Bulldog Coders and Cybersecurity clubs in his free time.He enjoys watching his favorite Basketball Team, the Washington Wizards. Finally, Aron has earned three internship opportunities. After University, Aron Bishop intends to pursue a graduate degree in Computer Science.

As a Junior Security & Compliance Administrator Intern at Johnson Controls Federal Systems (JCFS), my responsibilities were diverse and instrumental in enhancing the company's overall security posture. One of my primary tasks was to improve the workflow process within the security department, focusing on a combination of efficiency and compliance. This involved thoroughly revising and upgrading our system folder hierarchy, promoting better organization and easier retrieval of vital data.

As a part of the Security and Compliance team at JCFS, he was entrusted with the initial review and subsequent updates to the organization's Security Operation Manual (SOM). His duty was to ensure that the manual met or exceeded Federal compliance regulations. Subsequently, during his tenure as a Junior Research Intern subcontracted with the Department of Defense (DOD), he had the opportunity to delve into the intricate world of network protocols. Collaborating with a diverse team of experts, they explored the functionality of these protocols across various platforms. This intensive research was not limited to theoretical studies; it also included the practical application of industry-standard software, techniques, and methodologies. The role bolstered Aron's hands-on experience and understanding of network infrastructures.

In a subsequent position as a Software Engineer Intern subcontracted to a government agency, he expanded my professional skills even further. Aron was involved in requirement elicitation for an internal client project, which demanded excellent communication and analysis skills.

Simultaneously, he was required to review and refresh the project's codebase to ensure it adequately met the customer's specifications. This dual role in the development and client management gave me a profound understanding of how software solutions are tailored to meet specific client needs and how critical clear communication is in the process.

My name is **Matthew Akinmolayan,** and I am proud to be an Matthew Akinmolayan is an Upcoming Data Scientist at Bowie State University in Maryland, where I found the perfect fit after carefully considering various factors during his university selection process. What attracted me to BSU was its unwavering commitment to fostering a welcoming and inclusive environment for all students, regardless of their background or ethnicity.

I was particularly drawn to BSU's renowned Computer Science program and emphasis on experiential learning, including internships and co-op programs, which I knew would equip me with practical skills and real-world experience essential for success in the data science field. I found that Bowie State University offered unparalleled access to internships, networking events, and cultural experiences, further broadening his horizons and enhancing his professional growth.

Outside of academics, I am actively involved in various campus clubs and activities. I am a member of Bulldogs Coder and hold an executive position in the Doa organization, where I collaborate with fellow members to promote diversity and equality within the tech industry. Additionally, I serve as a Grader Enhancer, working to improve understanding for BSU students, and as a freshman advocate, offering guidance and support to first-year students as they navigate their college journey. I also contribute to the university's IT infrastructure as a junior system administrator, ensuring smooth operations and efficient use of technology. As an IBM and Adobe ambassador, I proudly represent BSU and facilitates partnerships while promoting the benefits of their respective technologies within the campus community. Moreover, I actively engage in student research, exploring cutting- edge data science methodologies and pushing the boundaries of knowledge in my field.

This past summer, I was excited to dive deeper into my passion for research. I conducted several research projects in data science, exploring advanced techniques and methodologies. Additionally, I am honored to have had the opportunity to work for the NSA, where I contributed my skills and knowledge to address critical challenges in cybersecurity. During this time, I also aimed to develop a groundbreaking cryptography algorithm that can bolster data security and privacy.

Lloyd Bolodeoku is a rising senior majoring in Computer Science with a passion for technology that began in high school. There, he was part of Cisco's Network Academy program and embarked on his first apprenticeship as a computer technician, delving deep into the world of computers.

During his freshman year, Lloyd secured a paid internship with the Maryland Innovation & Security Institute (MISI)/USCYBERCOM, where he continues to work as a Security Operations Center (SOC) Analyst and Junior Project Engineer. Notably, he obtained a security clearance during his tenure with MISI.

In his sophomore year, Lloyd engaged in unclassified research with the National Security Agency (NSA) and AI Squared. As his academic journey progressed, he secured another valuable opportunity in his junior year with Adobe, completing paid internships over the winter and summer. There, he contributed as a Security Engineer for their Incident Response (IR) team.

Lloyd Bolodeoku's impressive journey in the field of Computer Science showcases his dedication, skills, and determination to make a mark in the technology industry.

Emmanuel Olayemi, currently employed at Adobe and the Department of Homeland Security, anticipates joining a Government Agency in the future. He benefits from a BSU Endowed scholarship. As the founder of Bulldog Coders Club and Co-Chair of the Cybersecurity Club, he actively engages in cybersecurity competitions. Emmanuel's internship journey includes roles at Department of Homeland Security, Tata Consultancy Services, and Adobe as a Red Team Intern. Noteworthy, he secured second place at the International Graduate Research Conference for his impactful poster presentation.

Adeola Adekoya has made significant strides in her academic and professional journey, with notable experiences including her involvement with Battelle and participation in the Honors Program.

Jade Danner has gained valuable experience through internships with Cyborg Mobile and Microsoft. She embarked on a new opportunity this past summer as a New Technologist Apprentice in Seattle, Washington.

Marissa Curry stands out as a trailblazer at Bowie State University. She is the first Bowie State student to secure a position at Wellington Management, a remarkable achievement. Marissa has also been recognized as a Wellington HBCU scholar, showcasing her dedication and potential in her field of study.

Alexis Osueke is affiliated with Northrop Grumman and has received the 2022 Intel Undergraduate Diversity Scholarship. She's also part of the Sankofatech Achievers in Technology Mentorship Program.

Kamiyah Mitchell is a manager who recently obtained her IBM Security Zero Trust Principles certification.
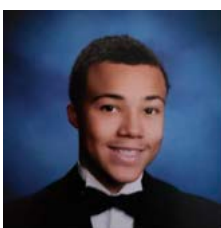
Daniel Byrd is a student who has been awarded an Adobe Scholarship.

Edrina Namirembe has established herself as a capable individual through her involvement with SSI and her role as an IT Specialist at the Pentagon, where she contributes her expertise in assisting the US Marine Corps.

Iyanna Jones is actively involved in various spheres, including her role at Citibank. She is a member of several notable groups such as Women in Computer Science, Bulldog Coders, NAACP, and the Honor Society. Iyanna's dedication is evident in her extensive engagement, which includes participation in Girls Who Code. Her skills are in high demand, as reflected by offers she has received from HPE and Intersystem. She is a Software Developer at Citibank. This past summer she interned as a software engineer with TCS and worked on a live chat application.

Iteoluwakiishi Ogunbiyi is actively engaged in various pursuits, including her participation in CyDeploy and the Women in Computer Science Club. She has also undertaken an internship Analysis Group in Boston and is involved in the Edlyft intern development program.

Chikezie Franklin Igwebuike has distinguished himself as an Adobe Intern, showcasing his dedication and skills in the field. Additionally, he has taken on the pivotal role of a Technology Compliance Product Owner, further contributing to his expertise and accomplishments.

Nia Plair is a standout among her peers. She has been chosen for the prestigious Bowie State Honors Program, maintaining a 3.5 GPA, completing 24 honors credits, and contributing 200 service hours. Notably, she's among the exclusive group of 75 Black technical and business students nationwide selected for the Visa Black Scholars and Jobs program that offers ongoing mentorship, year-round training, a sophomore-year internship, and a post-graduation job opportunity. Nia's upcoming attendance at a 2023 Visa Expo will further solidify her connection to the Thurgood Marshall College Fund.

Sarah Owusu, a dedicated individual, has earned notable accolades throughout her academic journey, including the prestigious "MAKING A DIFFERENCE" service certificate from BSU in 2023. Her commitment to excellence led to her being awarded the Renewable Merit Scholarship, the Goodwin Engineering Progressive Scholarship, and the Community Service Scholarship from Virginia Commonwealth University in 2021. Furthermore, her exceptional accomplishments extend to receiving the Da Vinci Design Thinking certificate from Virginia Commonwealth University in the same year.
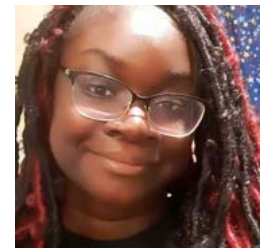
Jacqueline Ware is associated with Apollo Information Systems. She was a participant in the 2022 Cyber Warrior Diversity Scholar Program during the summer. Her involvement encompassed working on two research projects with the NSA. The first project revolved around Forward Edge AI, while the second centered on the SpaceNet Challenge. Furthermore, she gained valuable experience through an internship at TCecure, a cybersecurity company based in Baltimore. Jacqueline is an active member of BSU's Women in Computer Science group. Currently, she is looking forward to an upcoming internship opportunity with Apollo Information Systems.

Rey Emmanuel's educational journey spans Loyola University and Bowie State University. Notably, he has been associated with the Suri program and the General SURI initiative, demonstrating his commitment to diverse academic experiences.

Jessica Benitez has been actively involved with notable organizations such as NASA and Juxtopia. She has taken on the roles of a Software Development Intern and an IT Intern, showcasing her versatility and skills. Furthermore, she has achieved recognition by earning a Da Vince Design Thinking certificate from Virginia Commonwealth University in 2021.

CJ Obizuo has achieved significant accomplishments, including being a recipient of the MITRE Foundation Scholarship. Additionally, he has taken part in a valuable Cybersecurity Summer Internship, showcasing his dedication to his field of interest.
.
Nelson Onyebuchi Akpah is a college senior majoring in an undisclosed field. Hailing from Upper Marlboro, Maryland, he embarked on a summer internship facilitated by the school, collaborating with the talented team at Invisible Strengths. Over the course of three months, his responsibilities encompassed creating wireframes using Figma. These wireframes aimed to facilitate job listings for applications from individuals with disabilities. Working alongside a partner, they also contributed to establishing a startup website to aid in the training of future employees. In conjunction with his fellow intern, Nelson successfully completed the Figma files and provided them with a foundational website template for further development.Beyond academia, Nelson's focus revolves around his coursework and immersing himself in his field of study through reading. He typically engages in part-time jobs during the school year, but his current semester is an exception. He dedicates time to community service through his church.
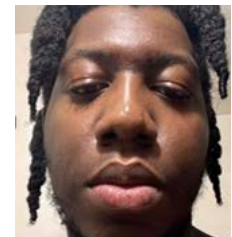
Praise Ben has made remarkable strides in their academic and professional pursuits. Notably, they have been involved with CyDeploy and recognized as an Adobe Scholar. Furthermore, Praise has achieved the significant milestone of becoming AWS Certified in Machine Learning - Specialty.

FACULTY AND STUDENT MENTORSHIP

During the Summer of 2022, the Department of Computer Science received $140,000 from the DC Public Education Fund to offer two six-week dual enrollment courses and four weeks of Bowie State University (BSU) faculty-mentored internship program to the District of Columbia Public School district 11th and 12th graders.

Due to COVID-19 restrictions, the program will be virtual with classes in synchronous mode. Eight faculty have participated in facility- mentored research. Each mentoring four students. They Dr. Shandilya, Dr. Shumba, Dr. Mareboyana, Dr. Josyula, Dr. J, Dr. Sarker, Dr. Bo Yang, and Dr. Choi. The program, which is part of the Summer Undergraduate program has help build a community of faculty members and students.

The two courses offered included the COSC 112- Computer Science I and the COSC 245 Cybersecurity Fundamentals, for a total of thirty-five students The COSC 112 is an introductory computer science course and COSC 245, Cybersecurity Fundamentals, was taught in partnership with the IBM Skills Academy which is responsible for the content.

At the completion of the course, students were given an option to take an IBM exam and earn an industry-recognized digital IBM Practitioner Badge. IBM Digital Badges demonstrate proficiency and related technical skills in a particular discipline. The IBM Digital Badge is an extremely valuable credential because the students gain instant recognition from organizations across industries and around the world. Students with the IBM badge will gain access to IBM Talent Match, directly connecting IBM customers and Business Partners interested in

hiring interns, co-op students, and full-time employees with verified skills. Also, students can post their badges to many social media sites and add them to their digital signature, thus allowing them to powerfully showcase their new skills and employment opportunities. Potential employers will be able to use this as part of their recruiting process.

The students also worked with Bowie Computer Science faculty as part of the faculty- mentored internship program. Each faculty was assigned two graduate students and a team of six students to work with. The following were some of the projects the students, graduate assistants and the faculty mentors worked on.

Design of an Improved Basic Calculator with Graphical User Interface (GUI)
Jermaine Smith & Yohanna Mbedgue

Gadgets such as calculators have improved our lives. The design and implementation of a basic calculator present challenges and constitute a good introductory exercise to programming. This project focuses on designing and implementing an enhanced basic calculator by fixing, extending, and customizing an existing basic calculator developed by Israel Dryer. We implement our calculator using Anaconda python distribution 3.9, Spyder IDE, and PySimpleGUI library. We followed 3 steps in this project.

In the first step, we ran the existing calculator program, and identified and fixed some of its limitations. For instance, the operation "3 + =" yields 6 on the regular calculator whereas Israel Dryer's calculator gives an error message. In our calculator, we fixed this shortcoming and some others. In the second step, we added some other functionalities such as "on/off ", "mod", "+/-", and power operator. In the last step, we changed the appearance of the calculator by customizing the colors and giving different colors to the operators/functions that we added to the existing calculator.

This project helped us to learn the basics of programming in python, and the basics of GUI development, and introduced us to investigating and improving upon existing work. In future work, we will implement more scientific functions, fix other limitations not addressed in this project, and attempt to rewrite the program from scratch.

Keywords: Calculator, Programming, Python
Research Professor: Dr. Manahor Mareboyana
Mentor: Yao Houkpati

Application of Blockchain Smart Contract in Smart Home System
Emeric Sery & Christian Ortiz

Smart Home is a keen concept of the Internet of Things, reshaping our physical environment into a smart ecosystem. Internet of Things has gained popularity by providing smart home automation facilities to our modern societies and undoubtedly, this innovation has provided excellent convenience and smart services to homeowners. In smart homes, several IoT-enabled devices are connected to each other, these connections are focused on gateways. The role of gateways in smart homes is important, however, its centralized structure results in several security vulnerabilities. To address the vulnerabilities blockchain technology becomes a potential game changer and remains the crucial technology to mitigate the present problems with IoT-enabled systems. In this research, we investigated the keen vulnerabilities in smart homes and analyzed them using different use cases. We illustrated how blockchain smart contracts could be implemented at the different layers of the smart home system and presented a blockchain-based system in Smart Home to address the problems of Network Security, Trust, Privacy, Identity Management and Centralized system. Overall, we observed that combination of blockchain and IoT can provide a powerful approach that can significantly pave way for new business models and distributed applications.

Research Professor: Dr. Bo Yang
Mentor: Ruth Olusegun
Keywords: Smart home, Smart Contract, Gateway, Blockchain, IoT, Security, and privacy.

Design of a Calculator with Graphical User Interface using Python Programming Language

Duncan Stadler & Herman Gonzalez

Designing the calculator was a tedious process that required a lot of thinking by any programmer. In this project, we developed a calculator with Graphical User Interface (GUI) using python programming with PySimpleGUI library. We separated the buttons for the calculator by having numbers and operators in different colors.
We did this not only to make the calculator different from others but to make it more interesting for users. We also added a bar menu at the top so that users would be able to customize the calculator. The user can change the background color of the calculator as well as fonts and themes. We created different buttons that would give the user more control of the calculator, such as, Clear ['C'], Delete ['⌫'], Answer ['Ans'], Parenthesized['('] , [')'] , Period ['.'], Arithmetic Functions, Scientific functions. Also, the calculator can evaluate a long expression and catches the invalid expression. The calculator can do both arithmetic functions (including addition, subtraction, division, and multiplication), and the scientific functions such as cos, sin, tan, log, square root and exponents using python function called "eval()" that evaluates expressions from a string-based or compiled-code-based input.

Research Professor: Dr. Manahor Mareboyana
Mentor: Mahfoudh Batarfi
Keywords: Python, GUI, Calculator, Programming
Application of Blockchain Smart Contract in Smart Home System

Wine Quality Prediction with Machine Learning Algorithms

Alex Edwards, Davieon Pharr, Erica Smith, Ronnell Spencer, Juanzel Staton, Juan Turner, Joey Valdivia

Various machine learning algorithms are being used to solve a wide range of real-life problems these days. This project is about how to create a variety machine learning models to predict wine quality based on given features such as physicochemical lab- based test results. It would be great if a machine learning model may be used to predict wine quality purely based on scientific data rather than the subjective tasting of human experts. It would allow a cheaper way of measuring the quality of wine in an objective manner. 7 different machine learning classifiers were created by using Python and various ML-related libraries in Kaggle.com, and their accuracies were compared. The Random Forest ML classifier was shown to provide the best prediction accuracies – 80%.

Research Faculty: Dr. Seonho Choi
Mentor(s): Patrick Addison and Adewale Ajibade
Keywords: Machine Learning, Python Programming, Data Science

The Evolution of Graphic Design in Video Games
Xavier Drumming & Jackson-Reed

This study begins to answer three (3) main questions: How did video game graphics evolve? How is a video game developed from start to finish? And what game engine platform is the most practical for students and researchers?

This research is important because it can help others choose the right platform for creating games, multimedia experiences, visualizations, and performing research. To answer the research questions, I began with a literature review to gain background knowledge on the history of video game graphics and on the video game development lifecycle. To find out which game development platform is best for students and researchers, a qualitative comparison was conducted on three principal game development platforms, Unity, Unreal Engine, and Vizard. Many factors were considered, some of which include: system resources, cost, ease of use, training material, and quality. Due to time constraints, the qualitative comparison was performed by only one highly-experienced participant. Future work would involve creating a form to collect data from more participants, refining metrics, and statistical analysis of the data. My initial expected result was that Unreal Engine would be the best choice for all aspects. The study results show that Unreal Engine provides the highest performance and quality while supporting deployment for all platforms. Vizard was the fastest and easiest to use, with native support for different device inputs and outputs, but only works on PCs and produces previous-generation results. Vizard is the best for research and data collection, and Unreal Engine is the best for graphics and video game development.

Keywords: video game history, game development lifecycle, game engine
Research Professor: Dr. Bo Yang
Mentor: Syl Jenkins

Synthetic Dataset Generation and Adaptation for Human Detection Algorithm for Unmanned Aerial Vehicle Rescue
Luna Berhane, Airren Burton, Irshaad Ellis-bey, Jaden Dicks, Fadil Olagunju, Mekhi Person, and Ryan Wheeler

In this project, we aim at introducing an effort to use synthetic imagery to test machine learning classifiers as an alternative to unmanned aerial vehicle–based data collections. The benefits of synthetic data are that it allows for the generation of a highly diverse dataset, gives us the ability to finely control experiments, and provides automatic annotation. We will focus on an alternative approach that can effectively substitute for the large-scale collection of real data. As an alternative to unmanned aerial vehicle (UAV)-based data collections, synthetic data can be generated using 3D rendering engines such as Google SketchUp. To do this, we first need to build real lifelike animated characters that look and behave like real people. This includes representing and controlling behaviors and facial expressions of animated characters to make them believable, personable, and emotional. Behaviors and expressions include facial expressions, body postures, hand gestures, gaze, and emotions. Second, we need to generate a complex real natural environment, such as deserts, forests, and mountains, as well as meteorological events, such as flooding, blizzard, hurricanes, and wildfires. Once the characters and terrains are generated, they can be imported into a game engine to generate an image dataset that can be used for machine learning model training and testing purpose.

Keywords: Computational Perception and Animation Lab

SUMMER AND YOUTH INCENTIVES

Summer Camp 2022

Local middle school students participated in the Bulldog 3C (Code, Create, and Cyber) Camp where participants learned how to create music and videos using GarageBand, iMovie, Video Editor, Keynote, and Drawing. The high school students in that same program were introduced to the Swift programming language, XCode Playground, and the Xcode IDE. Along with learning the basics of Swift such as syntax, conditionals, and loops, the students had an opportunity to create a COVID-19 tracking app and a background color switching app.

We hope that the students take what they have learned in the camp, expand that knowledge, and share it with others in the community.

First-year Kickoff

The Department of Computer Science organized a first-year kick-off event. The event was sponsored by Adobe. Took place on September 10, 2022. For this event, approximately 40-50 first-year Computer Science majors and their parents had an opportunity to learn about the Computer Science degree program, other degree programs offered by the Department of Computer Science, network with alumni, and gain strategies to ensure that they thrive as they matriculate through the program. The day prior to the event, the students met with Adobe executives Mo Ramos and Darrius Baker who discussed with them internship opportunities at Adobe. On the day of the event, the students in attendance were greeted with welcome speeches from Dr. Aminta Breaux (BSU President) and Dr. George Acquaah (Dean of Arts and Sciences). The students were then given an overview of the Department by Dr. Rosemary Shumba (Department Chair) and its Grade Enhancers Program by Dr. Hence of the U.S. Department of Education. In this event, the students took part in a panel discussion where Computer Science alumni shared their experiences in the program and shared their advice on how the incoming freshmen can succeed in the program. The event included a breakout session for the parents, hosted by Adobe, where the parents learned how they can support their students academically in their college journey. There was another breakout session for the students where they set goals that they aim to achieve during their studies. The event concluded with lunch, during which the students had the opportunity to network with alumni, faculty, and Adobe representatives.

Special Thanks To

○ The Planning Committee – Dr. James Stigall (Chair), Dr. Ruth Agada, Prof. Halima Audu, Prof. Staphord Bengesi, Prof. Veronica Boateng, Prof. Ruth Olusegun, and Mr. Emmanuel Olayemi.
○ Adobe for sponsoring the event – Mo Ramos, Darrius Baker, and other people from Adobe who came to the event.
○ Daniel Francois an alumni for serving as a moderator and to the following for serving as the panelists: Dejai Brown, Airrund Woolen, Lloyd Bolodeoku, Dinali Jayawardana, Michael Stewart, and Mene Bagudu.
○ Dr. Aminta Breaux, Dr. George Acquaah, and Dr. Hence (from the U.S. Department of Education) for speaking at the event.
○ Catherine Ojo, Joy Sarimakin, and Fahmina Nur Salma for their help in coordinating this event.

View the video of the event here!

Cyber Day - FBI/DCPS/Charles Flowers High School Visit

To mark cyber awareness month the Department invited the FBI to campus. Approximately 200 students from D.C. Public Schools and Charles Flowers High School received a tour of the Computer Science Building and heard a couple of FBI agents. Specifically speaking, the students met with Financial Aid/Admissions personnel; heard a talk from one of our professors doing research; interacted with current BSU students majoring in Computer Science; met with professors who served as mentors during this past summer (DCPS students only); and toured the Autonomous Technologies, Cybersecurity, and Virtual Reality Laboratories.

Special Thanks To

- The planning committee – Dr. James Stigall (Chair), Dr. Ruth Agada, Prof. Halima Audu, Prof. Staphord Bengesi, Ms. Uchenna Ndolo, Mr. Emmanuel Olayemi, and Mr. Joshua Igbeta
- Tour guides – Gregory Walters, Matthew Akinmolayan, Joshua Igbeta, Bryce Leshore, Joseph Keller, Joshua Igbeta, Praise Ben, and Dejai Brown
- Session leads – Dr. Jie Yan, Dr. Ruth Agada, Dr. James Stigall, Dinali Jayawardana, Joseph Keller, Dejai Brown, Cherrie Espineda, Dr. Appolo Tankeh, Staphord Bengesi, Patrick Addison, Dr. Angela Contee, Dr. Vivek Shandilya, and Anthony Herron
- FBI Talk Presenters – Carleen Emery, Scott Gillis, David Paniwozik, Dr. Aaron Ferguson, Dr. George Acquaah, Dr. Carl Goodman, Dr. Aminta Breaux
- MCs for the FBI Talk – Joshua Igbeta and Mene Bagudu
- Annette Wedderburn for allocating space on campus for the FBI Visit.
- Ms. Karen Shelton, Mr. Clifton Martin, and all personnel and students from Charles Flowers and DCPS for participating in the event

- *…and Dr. Rosemary Shumba for coming with the idea and making the event possible*

SUMMER AND YOUTH INCENTIVES

Summer Camp 2023

Between June 26 and August 4, 2023, Computer Science department offered a series of five hands-on oriented summer camps for middle and high school students who are interested in gaining a deeper understanding of the field of computer science. Each session included over 30 participants.
Below are the camp descriptions.

Apple Create and Code:

Students took part in Everyone Can Create and coded using an Apple device. They also engaged in photography, video, drawing, and music using Keynote for part of the week. Students learned about the basics of Swift--that is, variables and constants, data types, arithmetic and conditional expressions, control statements, and the like. They also learned about mobile app developing using Swift. They practiced creating three guided mobile apps in Xcode. As they created their guided apps, they became familiar with incorporating user interface elements into their mobile apps such as buttons, text, sliders, views, shapes, etc. as well as structuring those elements within the interface. Finally, the students were tasked with creating a social media app on their own as a cumulative project that they will demonstrate at the end of the camp.

Javacado and App Factory

The focus of the instruction was on the development of simple programming concepts and skills and providing students with the foundational knowledge and techniques necessary to become proficient in Java programming. The pedagogy was designed to be hands-on and interactive, with a strong emphasis on practical application and problem-solving. Through a combination of lectures, tutorials, and projects, students learned to program using Java and develop skills in software development, object-oriented programming, and application design. The goal of this approach was to equip students with the skills and knowledge required to become proficient Java programmers and prepare them for further study and employment in the field of software development.

AI/ML Ninjas

This program introduced campers to the exciting world of Artificial Intelligence (AI) and Machine Learning (ML) using Python. The program was structured around three fun and engaging events that taught students the basics of AI and ML. The first event focused on Reinforcement Learning. In this event, the kids learned how to make a Snake Game using Python, and then took it to the next level by teaching a computer to play and beat the game using Reinforcement Learning. The second event introduced the kids to Machine Learning and Object Detection. They learned how to to detect everyone's face in a group using OpenCV and then use ML algorithms to recognize and say each person's name. The final event involved the concepts of AI and ML using relatable themes. Students learned about how these technologies are used in our daily lives and how they are shaping the future of various industries, preparing them for future study.

CAMP FACILITATORS

Apple Create and Code Facilitators

Prof. Sarah Green & Dr. James Stigall

App Factory Camp Facilitators

Fahmina Nur Salma & Joseph Keller

Javacado Facilitators

Dayana Ferrufino & Chenilyn Joy Espineda

AI/ML Ninjas Camp Facilitators:

Praise Ben & Calvin-Caleb Amiolemen

Script Kiddies

Calvin-Caleb Amiolemen & Yao Houkpati

WOMEN IN COMPUTER SCIENCE ACTIVITIES

The Women in Computer Science at Bowie State University

Since its inception, the Women in Computer Science (WiCS) club at Bowie State University (BSU) has championed the cause of diversifying the technology industry by advocating for increased participation of women in computer science. The club is a vibrant community of 55 members (as of Spring 2023), committed to technical innovation, social collaboration, and professional networking. Encouragingly, the enrollment of female students in the Computer Science department has witnessed an upward trend, increasing from 36 in 2019 to 88 by Fall 2022.

Activities

1. Collaboration with Verizon and BSU Entrepreneurship Academy (Dec 2021 - Apr 2022): This alliance facilitated mobile application development training for WICS teams who later showcased their apps to Verizon judges.
2. Bi-weekly Meetings, Guest Speakers, Workshops: These regular events offer opportunities to learn, engage in fruitful discussions, and network with professionals in the tech industry.
3. Participation in Grace Hopper Conference (Sept 2022): Attended by 25 computer science students, this conference provided insights into research and career opportunities in computing. Subsequently, students shared their learning experiences at the "Women in Computer Science Mixer". Morgan State and Norfolk State women were invited to the Mixer held at BSU.
4. Research Coffee Chat (October 2022): Following Mixer, students raised questions about further research avenues. To address these queries, a Research Coffee Chat was organized where BSU Professors guided students on the nuances of pursuing short- term and long-term research in their topics of interests.
5. Collaboration with Morgan State University (MSU) Post Grace Hopper Mixer: In the spirit of fostering inter-university camaraderie and shared learning, following the Grace Hopper Women in Computer Science (WiCS) Mixer in the Fall of 2022, WICS BSU established a meaningful connection with the group at Morgan State University (MSU).
6. Building on the rapport established during the mixer, MSU extended an invitation to our students for their weekend hackathon. In a gesture of goodwill and collaboration, they also organized transportation, ensuring a hassle-free experience for attendees. Members from WICS, as well as other members from the BSU computer science department, participated in this event.
7. Game Afternoon & Movie Night: A delightful tradition of the club, this event marked the end of Women's History Month. It was an evening of fun and camaraderie where students engaged in games like Uno, Jenga, and tech trivia, even playing jeopardy against their professors and TA's. The event concluded with a screening of the movie 'Hidden Figures' in a conference room turned movie theatre.
8. Community Outreach: Several WiCS members have taken on leadership roles in a series of summer camps offered by the Computer Science Department from June 26th to August 4, 2023. These camps aim to provide middle and high school students a hands-on experience in computer science.

Impact

The cumulative effect of WICS activities has led to significant developments at various levels:

1. Academic and Career Advancement: The exposure to conferences, training, and workshops has enhanced the students' technical prowess and broadened their career perspectives. For Summer 2023, 25 club members are participating in paid internships.

2. Research Initiatives: WiCS is fostering an environment of academic inquiry and innovation, encouraging students to engage in research work.

3. Community Building: By organizing inclusive activities and events, WICS is successfully fostering a strong, supportive community of women in computer science.

4. Confidence Building: WICS endeavors have significantly bolstered the confidence and self-assuredness of women, empowering them to pursue careers in tech fearlessly.

5. Research Clusters Expansion: Graduate students mentoring undergraduates has proven effective in creating research clusters.

6. Enrollment Increase: The impact of WICS is perhaps most notably reflected in the increased enrollment of female students in the department, demonstrating the club's success in attracting and retaining women in computer science.

7. Leadership Roles in Summer Camps: Manifesting their growing confidence and technical expertise, several women from the club have taken up leadership roles in summer camps, further solidifying the club's impact on personal and professional development. This initiative aligns with WICS's broader mission of increasing the participation of women in computer science, starting at the grassroots level. It allows our members to give back to the community, while simultaneously providing a platform for their leadership and mentoring skills to flourish. The WICS members, as camp leaders, are not just responsible for imparting knowledge but also act as role models for the young attendees, showcasing what women can achieve in the field of technology.

    The women leading these camps use their experiences and insights to design engaging and interactive programs, challenge gender stereotypes, and inspire a new generation of girls to consider careers in the dynamic field of computer science. This initiative is instrumental in promoting computer science among younger students, aligning with WICS's broader mission of increasing the participation of women in computer science from the grassroots level. It allows our members to give back to the community, while simultaneously providing a platform for their leadership and mentoring skills to flourish.

8. Continual engagements like these extend the reach of WICS beyond Bowie StateUniversity, fostering a broader community of women in computer science across institutions. Such experiences further enrich our students' perspectives, exposing them to diverse ideas, and promoting a spirit of collaboration and mutual learning.

WiCS's broader mission is to increase the participation of women in computer science starting at the grassroots level.

The unique camps, each hosting 30 participants are as follows:

- *Javacado: Deepens skills in the widely-used programming language, Java.*

- *App Factory: Introduces students to app development.*

- *AI/ML Ninja: Introduced artificial intelligence and machine learning concepts.*

WiCS members lead these camps not only to impart technical knowledge but also to inspire a new generation of girls by showcasing the achievements of women in technology.

This initiative aligns with WiCS mission to increase women's participation in computer science.

CYBER CLUB ACTIVITIES

Student Organization	Role and Activity Description(s)	Dates
BSU Cyber competition team	Cyber defense competition	Fall 2022 and Spring 2023
DOD UARC Team visit	Students research presentations	4/11/2023
Howard Team visit	Students research presentations	4/18/2023
Cyber Security Club	Team Coach: On Feb 4. 2023 NCCDC Qualifier. The BSU Bulldog cyber team participated in the 2023 MACCDC Qualifier. The National Collegiate Cyber Defense Competition (NCCDC) is the championship event for the Collegiate Cyber Defense Competition system – the largest college-level cyber defense competition in the USA. Web link: https://www.nationalccdc.org/	2/4/2023

CYBER CLUB ACTIVITIES

Student Organization	Role and Activity Description(s)	Dates
BSU Cyber Day Workshop and STEM festival	Cyber Day and STEM events	10/22/2022
NSF SFS program visit	Research Presentations	12/12/2022
NSF Targeted Infusion workshop	Research Presentations	4/15/2022
Organizing labs showcase to high school students from PGPS, DCPS, FBI	Research Presentations	10/28/2022

PROFESSIONAL DEVELOPMENT

In Readiness of Summer Internship

From 01/09/2023 to 01/27/2023, the Computer Science Department hosted a three-week intensive training workshop for undergraduate and graduate students to continue and advance the winter 2022 workshop series. This program aimed at increasing the retention of computer science department students by engaging them in an experiential learning program aligned to the theory and content taught in the classroom to solve real-world problems and provide them with the skills they need to succeed in summer internships.In this program, there were four primary areas of study:

Web Technologies:
The basics of React and Web design were discussed, as well as more advanced techniques and best practices. By the end of the class, each student had developed his or her web page using React. Joseph Keller and Calvin-Caleb Amiolemen, seniors and sophomores, respectively, served as workshop facilitators.Mobile App Development: Students were taught on how to develop mobile apps using react native frameworks and JavaScript. Emmanuel Crown, a mobile app developer was the facilitator.

Python for AI/ML:
A basic understanding of Python, numerical analysis tools such as Pandas and NumPy, visualization tools such as Seaborn and matplotlib, and various Scikit-learn machine learning algorithms were explored. Yao Houkpati, a doctoral student, facilitated the study.

Java for Problem-Solving Skills:
This course introduces students to various methods for solving real-life problems using Java programming. Dr. Shandilya, an associate professor of computer science, led this workshop.

Multiple sessions were dedicated to each topic, and the instructors tended to be students with extensive knowledge. For mobile app development, web development, and Java for problem-solving skills, sessions were conducted from 10 am to 4 pm over one week each with an hour break in between. The sessions for AI/ML in Python were held for two weeks from 5 pm to 8 pm.A recruitment process was carried out in December 2022, and 73 students were recruited, but only 43 (59%) students completed the program successfully by attending, on average of two topics out of four in the program. There were 18 (25%) students who never attended any session and 12 (16%) students who attended only partially.

As an incentive, prizes were awarded those completing the program. In addition, the Computer Science Department provided $15,000 to pay facilitators for Web Development, Mobile App Development, Python Workshop, and the program coordination.

The program was concluded on 03/03/2023 with a project showcase titled "Innovation and Creativity Competition". The first three winners were announced and presented with awards as follows:

First Place $1,500.00
Second Place $1,250.00
Third Place $1,000.00

According to our distinguished judges, **Sarah & CJ group (Sarah Owusu and Chukwuemeka Obizuo)** won first place for developing a student portfolio website, promotion website, and timeline website.
Coders.NNET (Ekene Onoha and Nia Plair) won second place for building BSU Shuttle App. Third place was the a tie between **Light (Fahmina Nur Salma),** who developed a professional portfolio website, and **Women Who Code Plus a Guy (Chenilyn Joy Espineda,**

Dayana Ferrufino, Praise Ben, Calvin-Caleb Amiolemen), who created an object detection app.

STUDENT IMPACT

* Increased awareness of societal problems and how technology can be used to address them
* Developed new skills, such as React and React Native.
* As a result of the knowledge acquired, students solved real-life problems.
* Enhanced presentation skills
* Ability to conduct research more effectively
* Development of an entrepreneurial mindset.

Recommendations and Feedback from Students

There were numerous kudos and appraisals from the students, along with some recommendations for improvement of the upcoming workshop. These are as follows:

* The program should be continued and given more time
* Have projects that are relevant to the industry and are in real-time
* Programs should be held frequently rather than once a year.
* There is a need for more specificity, such as cyber security training
* To focus on workforce development, the workshops should be converted into income-generating boot camps
* The summer sessions will be an excellent opportunity to work on hands-on projects.
* Graduate student curricula should include Python.
* There is a need to hire Teaching Assistants to reduce instructors' time fixing individual errors.

INTERNSHIPS

Through the Department of Education grant, the Department placed 30 students in internship with start-ups around the state. In addition, each of our partners including Cvent, Battelle, Tata Consultancy Services each hiked an average of six of our students.

Thanks to Adobe, through our Cybersecurity collaboration, fifteen of our students including graduate student participated in an immersive program with Adobe, followed by a 10-week summer internship. Several other students found placement with Eli Lilly, Apple and Bank of America after the Grace Hopper Conference.

STUDENT NAME	COMPANY
Praise Ben	Cydeploy
Marissa Curry	Wellington Management
Matthew Akinmolayan	NSA
Destiny James	Suri Cybersecurity
Chenilyn Joy Espineda	Battelle
Ogechi Onyekwere	Suri Cybersecurity
Rey Emmanuel Loyola	Suri Cybersecurity
Gbemi Oluwagbire	Battelle
Ikechi Akwara	Adobe
Chikezie Franklin Igwebuike	Adobe Inc
Jawan Foster	SURI - The Wine Prediction
Daniel Byrd	American College of Radiology
Edrina Namirembe	Super Systems Inc
Adeola Sonoiki	Cvent
Josue Coreas	SURI Program
Roxan Rockefeller	Eli Lilly
Natasha Wynter	Cvent
Kavari Leonard	Suri Program
Oluwabukunmi David Jaiyeola	Apollo Information Systems
Noble Grant	2U
DaSean Best	Cvent

STUDENT NAME	COMPANY
Aron Bishop	Federal Agency
Uzochi Anaele	Battelle
Mene Bagudu	Adobe
Jacqueline Ware	Apollo Information Systems
Jada Danner	Cyborg Mobile and Microsoft
Iteoluwakiishi Ogunbiyi	Invisible Strengths
Alexis Osueke	Northrop Grumman
Isha Renner	Summer Undergraduate Research Institute
Devine Chinemere	Peraton/Northrop
Kamal Epps	Baltimore Gas & Electric (BGE)
Jessica Benitez	NASA - Goddard (Peraton) and Juxtopia
Sydney Brutus	Apollo Information Systems
Anthony Parker	Juxtopia
Dawn Marshall	Laboratory for Telecommunication Sciences
Chukwuemeka Obizuo	The MITRE Corporation
Carlos Sanni	Graham Technology
Jared Kouadio	Juxtopia
JerMia Travers	Juxtopia
Calvin-Caleb Amiolemen	Cvent
Tobiloba Ayodeji	MITRE
Jawan Foster	SURI The Wine Prediction
Melanie Nzaou	Juxtopia
Ashanti Boone	Apple
Omar Seck	SURI
Eddy Koundjou Yem	Amazon Web Services
Busolami Adara	Bank of America

RESEARCH CONFERENCE

The Bowie State University Graduate School Presented International Graduate School Research Conference IGRC – 2023 at the Student Center on Friday, March 31, 2023, and Saturday, April 1, 2023, Dr. Hoda El-Sayed was the Session Chair. The following list of the students participated in the event with their research project from the Department of Computer Science:

In person

Patrick Nana, BSU – Deep Learning Methods for Intrusion Detection.

Dr. Uchenna Ndolo, BSU –Artificial Intelligence (Al) Changing Cybersecurity.

Wasiu Sanyaolu, BSU – Prediction of Wine Quality by Gini Index, Entropy and Misclassification Error.

Dinali Jayawardana, BSU – I Detect- A Bio Medical Educational System for Real Time Object Identification Using Augmented Reality.

Tanvi Patel, BSU – The Use of Deep Learning to Alter and Analyze Facial Expression in Syndromic Facial Diagnostics. In Person

Ruth Agada, BSU – Effect of Gravity on Creeping Salts and Salt Mixtures: Developing Image based and Al Enhanced Diagnostics for Determining Chemical Compositions.

Ayodeyi Ogundiran, BSU – A framework to Reconstruct Digital Forensics Evidence via Goal-Oriented Modeling.

George Idoko, BSU – 3D Representation of EKG Pulse Data and Atlas of Heart Condition.

Srini Kolachina, BSU – Deep Learning Model Enhanced Skin Cancer Detection.

Galamo Monkam, BSU – Digital Images Forensic Analyzer to Detect Al-generated Fake Images.

Chris Abili, BSU – Is Edge Computing the Real Deal?

Halima Audu, BSU. – Al-based hydroponically grown kale monitoring system in the simulated microgravity environment.

Poster

Kuol Ayen, BSU – Privacy Preserving Model for Leveraging Mobility Data for Public Health.

Emmanuel Olayemi, BSU – A Lightweight Facial Detection and Recognition System Using a Raspberry Pi.

Fahmina Nur Salma, BSU – Early Detection of Blood Flow Interruptions Inside the Heart and Increase the Accuracy of Predicting the Disturbances Using Machine Learning.

Olakekan Abdulazez, BSU – Synthetic Dataset Generation and Adaptation for HumanRescue -

Tunde Akinlaja, BSU –Sign Language Recognition Using a Combination of Motion Capture Suits and an RGB Camera.

Halima Audu, BSU – AI-based Hydroponically Grown Kale Monitoring System in the Simulated Microgravity Environment.
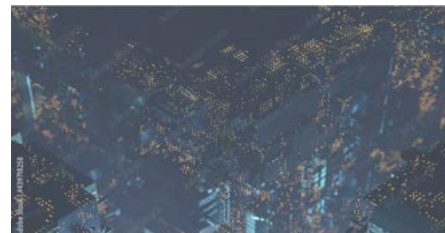
EXPERIENTIAL LEARNING: CAPSTONE PROJECTS

The computer Science Students had an opportunity to work with Booz Allen on Capstone projects. In fall 2022 the capstone resulted in two job offer. Below are the bios of the students who participated in the Capstone courses. Special thanks to the Booz Allen team who made this a success Dr. Sean Guillory and Mr. Nathaniel Donkoh-Moore who joined our classes every week to mentor our students.

3D FILABUSTER 2022 Capstone Team Members (Third Floor Company)

Cherrie Espineda. Cherrie Espineda is driven by strong family support, serving as her motivation for achieving remarkable professional success. Her capstone project was fueled by the aspiration to enhance critical thinking and problem-solving skills. She has interned as an Associate Software Engineer at Cvent Company, focusing on backend development. Notably, she contributed to a new feature for the Onsite Solutions Web application, improving the contactless check-in and badging process. Cherrie's interests extend to exploring new cities, photography, and visiting museums, enriching her multifaceted pursuits.

Michael Stewart. *Profiled earlier in this newsletter*, Michael's primary motivation for participating in the capstone project is to enhance his engineering skills. His interests encompass cloud computing, artificial intelligence, and full-stack development. Michael's summer involved an internship at Oracle, where he worked as an Oracle Cloud Infrastructure intern, focusing on frontend development. He created a web-based plugin to simplify report access for internal users. Outside of academics, Michael enjoys video games, record collecting, and visiting art museums.

Tyler McBride is a recent graduate of the computer science program, extends the legacy as a third-generation STEM major with a computer scientist mother and an electrical engineer grandfather. Hailing from Southern Maryland, his roots trace back to Philadelphia. Tyler's hobbies include video games, 3D printing, reading, and programming. He draws inspiration from notable figures such as Mathew Henson, Neil DeGrasse Tyson, Mae Jemison, and his own family. In the recent summer, Tyler held an internship at The App Association, where he served as their data scientist, contributing to the public policy nonprofit's initiatives.

Michael Gregg II is a computer scientist from Clinton, Maryland. He finds inspiration in Tyler the Creator, Tony Hawk, and Johnny Rotten. Joining the capstone project to improve his teamwork, communication, and confidence, Michael is passionate about video games, anime, and skateboarding. He is dedicated in his devotion to study and improving his programming skills. Michael's interests extend to a potential career as a computer systems analyst, as he continues to explore the exciting field of computer science.

NAHAUTAL 2022 Capstone Team Members

Iyanna Chanel Jones. *Profiled earlier in this newsletter,* Beyond her academic and professional pursuits, Iyanna enjoys various hobbies in her free time. She finds solace in collecting vinyl records, immersing herself in the world of music. Additionally, she nurtures her intellectual curiosity through reading, exploring diverse subjects and ideas. Iyanna also enjoys culinary adventures, using her free time to experiment and improve her cooking skills.

Chidimma Ugorji. Chidimma Ugorji is a driven and talented computer scientist with a keen interest in Research, Cybersecurity, and Software Engineering .In her free time, Chidimma indulges in artistic pursuits, finding joy in sketching, and also enjoys enriching her mind through reading. With a diverse range of interestS and a passion for both technology and creativity, Chidimma embodies a well-rounded and accomplished individual.

Divine Aseaku. Introducing Divine Aseaku, a talented graduate of Bowie State University, Divine's passion for capstone projects, especially those involving software development with web technologies, was evident in their 2022 endeavor. Collaborating with a team, they delved into natural language technologies to create an innovative application that facilitates language translation using text and speech prompts. This exciting project has ignited Divine's curiosity about the correlations between data and the advancements achieved through AI wrangling and training. In addition to their academic achievements, Divine gained valuable experience as a software developer intern at Battelle. Beyond their professional pursuits, they devoted significant time to personal projects and enjoyed road cycling with their team. After participating in Northrup Grumman's Pathways Program, they accepted a position as systems engineer earlier this year.

Joshua Dwayne Marshall graduated from Bowie State University in December 2022. He held internships at Amrock and Marsh McLennan, and he has obtained several certifications. He now serves as Applications Development Analyst at Victor, an elite specialty an global managing underwriter. In his leisure, Joshua enjoy travel and sports.

ADOBE INTERNS SUMMER 2023

Through our partnership with Adobe, 15 students participated in the Summer 2023 internship program, which included a six-week immersive program during the Spring semester. Students also had an opportunity to attend the Intern Summit in LA. We are happy to report that the following students then received offers from Adobe.

Top Row: **Lloyd Bolodeoku,** Incident Response Security Engineer; **Ikechi Michael Akwara,** and **Chikezie Franklin Igwebuike,** SOC Analyst: Incidence Response

Second Row: **Joseph Keller,** SOC Analyst: Incidence Response, **Mene Bagudu,** and **Srini Kolachina**, Security Data Scientist.

FOCUS ON FACULTY ACHIEVEMENTS

Our faculty members have been involved in research and below are some of their presentations and publications.

Faculty	Activity
Dr. Soo-Yeon Ji 	Presentation Title: **EEG Analysis of Neurodevelopmental Disorders by Integrating Wavelet Transform and Visual Analysis** Event: AAAI, DC Date: Feb. 13, 2023 Presentation Title: **Research projects presentation - RITA UARC Consortium Visit** Event: CS conference Date: April 11, 2023 Presentation Type: Research Demonstration Presentation Title: **NSF visit - Research Project Presentation** Event: CS conference Date: Oct. 12, 2022 Presentation Type: Research Demonstration Presentation Title: **ORSP presentation- The Critical Balance: Managing, Instruction, Service and Administering Your Grant** Event: CS Event Date: Apr 25 2023 Presentation Type: Presentation and Panel Discussion Publication Title: **Multi-Resolution Analysis with Visualization to Determine Network Attack Patterns** Publisher: Applied Sciences, MDPI Date: 2023 Publication Type: referreed Publication Title: **Interactive Web-based Visual Analysis on Network Traffic Data** Publisher: MDPI Date: 2023 Publication Type: referreed Publication Title: **EEG Analysis of Neurodevelopmental Disorders by Integrating Wavelet Transform and Visual Analysis** Publisher: Public Health on Artificial Intelligence (PHAI) workshop, AAAI Date: 2023 Publication Type: referreed

FOCUS ON FACULTY ACHIEVEMENTS

Faculty	Activity
Dr. Hoda El-Sayed	Presentation Title: Panel Member in the **Second Annual BSU Women of Color in STEM** Event: Women In STEM Date: May 8 2023 Presentation Type: In Person Presentation Title: **DSEC Presentations related to the grant to Morgan State University, DoD STEM** Event: DoD STEM Date: March 2023 Presentation Type: Virtual Authors: A. Algahtani and H. El-Sayed Publication Title: **"Building a Novel Ensemble Learning – Based Prediction Framework for Diagnosis of Coronary Heart Disease"** Publisher: International Journal of Intelligent Systems and Applications in Engineering, Vol.10 No.3 (2022). ISSN: 2147-6799 Date: Oct, 2022 Publication Type: Peer-Reviewed Conference
Dr. Manohar Mareboyana	**Presentation Title: PHIT Presentation of Health Statistics** **Event: PHIT** Date: Summer 2022 Presentation Type: Online

FOCUS ON FACULTY ACHIEVEMENTS

Faculty	Activity

Dr. Jie Yan

Presentation Title: **EEG Analysis of Neurodevelopmental Disorders by Integrating Wavelet Transform and Visual Analysis**
Event: AAAI, DC
Date: Feb. 13, 2023

Presentation Title: **Research projects presentation - RITA UARC Consortium Visit**
Event: CS conference Date: April 11, 2023
Presentation Type: Research Demonstration

Presentation Title: **NSF visit - Research Project Presentation**
Event: CS conference Date: Oct. 12, 2022
Presentation Type: Research Demonstration

Presentation Title: **ORSP presentation- The Critical Balance: Managing, Instruction, Service and Administering Your Grant**
Event: CS Event Date: Apr 25 2023
Presentation Type: Presentation and Panel Discussion

Publication Title: **LUCID Network Monitoring and Visualization Application.**
Journal of The Colloquium for Information Systems Security Education, Vol.9, No.1
Date: 2022
Publication Type: Refereed journal

Authors: S. Kolachina, R.Agada, W. Li, and J. Yan
Publication Title: **"Deep learning model enhanced skin cancer detection,"**
Biophotonics and Immune Responses XVIII, vol. 12380
Date: 2023
Publication Type: Refereed conference

Publication Title: "**A Framework to Reconstruct Digital Forensics Evidence via Goal-Oriented Modeling"**
Publisher: **2nd IEEE International Conference on AI in Cybersecurity (ICAIC) University of Houston, Texas, USA**
Date: 7- 9 February 2023
Publication Type: Refereed conference

Publication Title: **A GAN-based Approach to Detect AI-Generated Images**
Refereed conference

FOCUS ON FACULTY ACHIEVEMENTS

Faculty	Activity
Dr. Sreenivasan Ramasamy Ramamurthy	Presentation Title: **CHARLIE: A Chatbot that Recommends Daily Diets and Fitness Plans** Event: Atlanta, GA Date: 3/13/23 Presentation Type: Conference Presentation Title: **Self-Adaptive Autonomous Systems** Event: (UMD+UMBC+ARL) Organized Annual Review Meeting Date: 11/16/23 Presentation Type: Virtual Presentation Title: I**nternet of Things for Smart Homes, Cities and Contested Environments** Event: Morgan State University Computer Science Department Seminar Date: 3/08/23 Presentation Type: Virtual Publication Title: **Sports analytics review: Artificial intelligence applications, emerging technologies, and algorithmic perspective** Publisher: **Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery (IF: 7.58)** Date: Mar 2023 Publication Type: Journal, Peer-reviewed Publication Title: **PerMTL: A Multi-Task Learning Framework for Skilled Human Performance Assessment** Publisher: **Conference on Machine Learning and Applications (ICMLA)** Date: Dec 2022 Publication Type: Conference, Peer-reviewe**d** Publication Title**: HeteroEdge: Addressing Asymmetry in Heterogeneous Collaborative Autonomous Systems** Publisher: **Arxiv Pre-print** Date: May 2023 **Publication Type:** Arxiv and manuscript Under Review at IEEE MASS 2023 International Conference

FOCUS ON FACULTY ACHIEVEMENTS

Faculty	Activity
Dr. Bo Yang	Presentation Title: Sp**atial Intelligence in Edge Cognitive Computing** Event: IEEE Conf on Artificial Intelligence Date: Jun 2023 Presentation Type: Research Paper Presentation Presentation Title: **Ensemble Stacking with the Multi-Layer Perceptron Neural Network Meta-Learner for Passenger Train Delay Prediction** Event: IEEE Conf on Artificial Intelligence Date: Jun 2023 Presentation Title: **Metaverse** Event: CAS Scholars Studio Date: April 3 2023 Presentation Type: Presentation Publication Title: **Spatial Intelligence in Edge Cognitive Computing** Publisher: **IEEE Conf on Artificial Intelligence** Date: 2023 Publication Type: peer-reviewed Publication Title: **Ensemble Stacking with the Multi-Layer Perceptron Neural Network Meta-Learner for Passenger Train Delay Prediction** Publisher: I**EEE Conf on Artificial Intelligence** Date: 2023 Publication Type: peer-reviewed Publication Title: **Abstractive Text Summarization Based on Long-Short Transformer** Publisher: I**EEE Intl Conf on AI and IoT** Date: 2023 Publication Type: peer-reviewed

FOCUS ON FACULTY ACHIEVEMENTS

Dr. Seonho Choi

Presentation Title: **EEG Analysis of Neurodevelopmental Disorders by Integrating Wavelet Transform and Visual Analysis**
Event: AAAI, DC
Date: Feb. 13, 2023

Presentation Title: **Research projects presentation - RITA UARC Consortium Visit**
Event: CS conference Date: April 11, 2023
Presentation Type: Research Demonstration

Presentation Title: **NSF visit - Research Project Presentation**
Event: CS conference Date: Oct. 12, 2022
Presentation Type: Research Demonstration

Presentation Title: **ORSP presentation- The Critical Balance: Managing, Instruction, Service and Administering Your Grant**
Event: CS Event Date: Apr 25 2023
Presentation Type: Presentation and Panel Discussion

Publication Title: **Hardware Watermarking for Finite State Machines, with Symmetric Circuit Encryption**
Publisher: **Journal of Research in Engineering and Science**
Date: Jan. 2023
Publication Type: Refereed Journal

Dr. James Gil De Lamadrid

Publication Title: **Hardware Watermarking for Finite State Machines, with Symetric Circuit Encryption**
Publisher: **International Journal of Research in Engineering and Science**
Date: 1/23
Publication Type: Peer-reviewed journal

FOCUS ON FACULTY ACHIEVEMENTS

Faculty	Activity
Dr. Darsana Josyula	Presentation Title: **Authentication in Zero Trust Environments** Event Date: July 13, 2022 Presentation Type: Online Presentation Title: **Self-Adaptive Systems** Event Date: Feb 15, 2023 Presentation Type: Presentation Presentation Title: **ARTIAMAS BSU Research Update** Event: UMBC Date: Feb 13, 2023 Presentation Type: Research Presentation Presentation Title: **Authentication in** **Publication Title: Multi-Resolution Analysis with Visualization to Determine Network Attack Patterns** **Publisher: Applied Sciences, MDPI** Date: 2023 Publication Type: refereed Publication Title: **Interactive Web-based Visual Analysis on Network Traffic Data** **Publisher: Information, MDPI** Date: 2023 Publication Type: refereed Publication Title: **EEG Analysis of Neurodevelopmental Disorders by Integrating Wavelet Transform and Visual Analysis Publisher: Public Health on Artificial Intelligence (PHAI) workshop, AAAI** Date: 2023 Publication Type: refereed

FACULTY EXTERNALLY-FUNDED RESEARCH GRANTS/CONTRACTS

Dr. Hoda El-Sayed	Grant Title: DSEC/MI Pathways Organization: DoD Status (Awarded/Not awarded): Continuing AY 2023 funding: $176,000
	Grant Title: DESEC/MI Pathways Organization: DOD Status (Awarded/Not awarded): Pending AY 2023 funding: $175,000
	Grant Title: NSF Scholarship For Service (SFS) Organization: Status (Awarded/Not awarded): Continuing AY 2023 funding: $2.1M
	Grant Title: DoD The Cyber Talent Expansion Program Organization: DoD Grant Abstract: Submission Date: Status (Awarded/Not awarded): Continuing AY 2023 funding: $992,234
Dr. Manohar Mareboyana	Grant Title: LASR (Lab Academic Summer Research) Organization: NSA Grant Abstract: Submission Date: AY 2023 funding: $50k
Dr. Sreenivasan Ramasamy Ramamurthy	Grant Title: Systems Modeling for Cybersecurity Organization: NAVAIR Status (Awarded/Not awarded): Funded AY 2023 funding: $15,000
Dr. Seonho Choi	Grant Title: Developing Web Services for Testing Machine Learning Models against Adversarial Example Based Attacks Status (Awarded/Not awarded): Funded AY 2023 funding: $8,000

FACULTY GRANTS

Dr. Darsana Josyula	Grant Title: RITA-UARC Organization: Air Force Grant Abstract: Submission Date: 1/23/23 Status (Awarded/Not awarded): Approved for funding AY 2023 funding: Approximately 1 million/year
	Grant Title: Center of Excellence in the area of Advanced Computing and Software Organization: DoD Status (Awarded/Not awarded): Pending AY 2023 funding: $1,500,000.00
	Grant Title: V02Max Estimation from wearable data Organization: MIPS Status (Awarded/Not awarded): Pending AY 2023 funding: $200,000.00
	Grant Title: Self-adaptive autonomous systems Organization: Artiamas Status (Awarded/Not awarded): Continuing AY 2023 funding: $286,375.00
	Grant Title: Real Time Machine Learning for Robocalls Organization: NSF-Forward Edge Status (Awarded/Not awarded): Completed AY 2023 funding: $110,000.00
Dr. Soo-Yeon Ji	Grant Title: Understanding Human Emotions Associated with Attention Activities in Temporal Domain Utilizing Multimodal Data Organization: NSF $399,910.00
	Grant Title: Designing an Interactive Web-based Visualization System to Analyze Network Behaviors using Cloud Computing Organization: DoD AY 2023 funding: $590,877.00
	Grant Title: NASA Peraton Internship Grant Organization: NASA/ Peraton Grant Abstract: Continuing AY 2023 funding: $30,000,00

Dr. Jie Yan	Grant Title: DoD UARC project Organization: Air Force Grant Abstract: Submission Date: 10/2022 Status (Awarded/Not awarded): Continuing AY 2023 funding: $5.4M
	Grant Title: DHS Deep Fake project Organization: DHS Grant Abstract: Status (Awarded/Not awarded): Awarded AY 2023 funding: $50,000.00
	Grant Title: EAGER: SATC-EDU: Exploring Visualized and Explainable Artificial Intelligence to Improve Students' Learning Experience in Digital Forensics Organization: NSF Status (Awarded/Not awarded): Ongoing AY 2023 funding: $64,000.00
	Grant Title: EiR: Excellence in Research: Detecting Vulnerabilities in Internet of things with DL Organization: NFS Status (Awarded/Not awarded): Continuing AY 2023 funding: $728,000.00
	Grant Title: JH Applied Research Lab Lunar VR project Organization: NASA Submission Date: 12/09/2022 Status (Awarded/Not awarded): Pending AY 2023 funding: 500,000.00
	Grant Title: NASA: AI-based hydroponically grown kale monitoring system in the simulated m Organization: NASA Status (Awarded/Not awarded): Continuing AY2023 funding: 1M

Dr. Bo Yang	Grant Title: RITA UARC Consortium with Howard Univ Organization: DOD Status (Awarded/Not awarded): Awarded AY 2023 funding: $4,500,000.00
	Grant Title: The Small Bodies Node of NASA's Planetary Data System with the Minor Planet Center Organization: NASA Status (Awarded/Not awarded): Awarded AY 2023 funding: $456,063.00
	Grant Title: Abstractive Text Summarization for NLP Organization: Adobe Research Status (Awarded/Not awarded): Awarded AY 2023 funding: $8,000.00
	Grant Title: Sub-award from Peraton company for student training and collaboration Organization: NASA Status (Awarded/Not awarded): AY 2023 funding: $30,000.00

This index is provided to share the work of our faculty, staff, students, alum, and partners.

DEPARTMENT OF COMPUTER SCIENCE

Computer Science Building

Suite 207

301.860.3960

BOWIE
STATE UNIVERSITY
— 1865 —