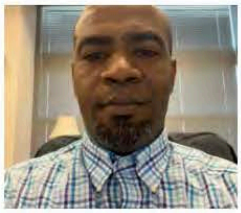
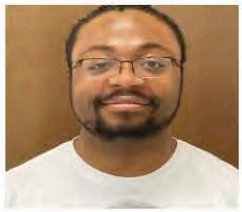
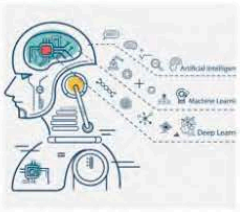
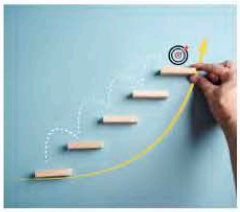






BULLDOG BYTE



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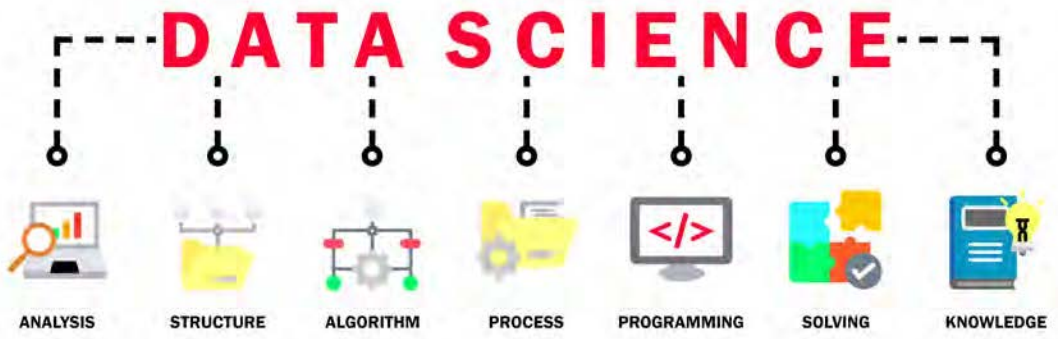
Dept. of Computer Science • 301.860.3960

ABET Computing Accreditation Commission

The Computer Science Department is committed to being a model of creativity and technical leadership. From building software for complex systems to exploring virtual reality, our students study a wide range of networking, artificial intelligence, research, and cybersecurity concepts that will prepare them for success in the workplace or an advanced degree program. Small class sizes and a tight community of faculty, students, and alumni provide the resources and support students need to be successful.



CHAIRPERSON'S WELCOME

I am delighted to extend warm greetings to our community of students, faculty, alumni, newly transferred students, valued External Advisory Board members, and incoming first-year students.

Today, I am thrilled to share our dynamic department's latest developments and achievements. This year, our faculty's commitment to excellence has moved us to new heights, showing the strength and dedication that are the bedrock of our success.

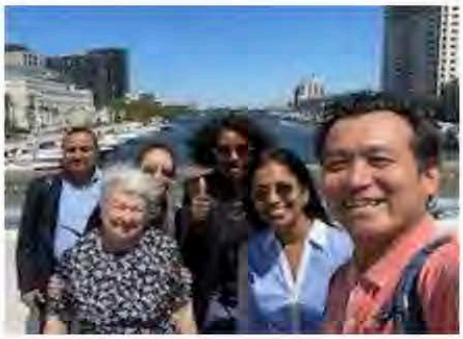
Let's get into some important updates:

Dr. Guy-Alain Amoussou has been appointed Provost & Vice President for Academic Affairs. Meanwhile, Dean Acquaah continues to lead our College of Arts and Sciences with exceptional skill and vision. Prof. Gina Lewis has assumed the role of Associate Dean of the College.

We bid farewell to Jim Hickey, our System Administrator, in April and actively seek his successor. We also welcome new members to our team: Mr. Thiam as our new Program Management Specialist; Ms. Oji, the Program Management Specialist overseeing the HBGI program; and Ms. Brenda Johnson as our new Assistant System Administrator. I want to welcome them warmly to our family. Their bios are featured in this bulletin so you can get to know them better.

Our academic offerings have expanded significantly. Since Fall 2023, we have launched three new BS programs: Cyber Operations Engineering, Data Science, and Software Engineering. Additionally, we are proud to introduce a new BS in Gaming and Virtual Reality, developed in collaboration with the Department of Fine and Performing Arts.

In partnership news, we have collaborated with Apple to support our graduate students' conference attendance. This initiative complements our funding for 20 students to attend the Grace Hopper Conference and 15 students to participate in the NSBE conference.



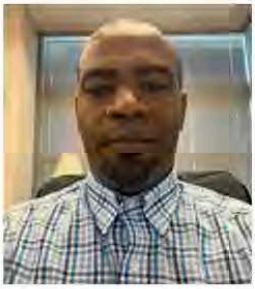
I commend our faculty for their relentless dedication, reflected in their scholarly contributions, including paper presentations, publications, and grants. Special mention goes to Dr. Ramamurthy for securing a Department of Energy $599,000 grant in his second year at BSU. Well done, Dr. Ramamurthy. Notably, seven of us had the enriching opportunity to attend the 2024 ABET Symposium in Tampa, Florida, this April—a fantastic occasion for learning and bonding.

Our departmental motto, "Student Success," continues to be our guiding light. This year, we celebrated the graduation of three doctoral students: Drs. Anthony Herron, Hubert Boateng, and Mahfoudh Mohammad Batarfi, with the first two mentored by Dr. Josyula and the latter by Dr. Mareboyana. We also have seen an increase in the graduating students from 13 in AY 2021 to 39 in AY 2023

This magazine is brimming with the voices of students and student success stories that are too numerous to list here but are sure to inspire. Please enjoy reading about these remarkable achievements. Thank you for being a part of our community. We are experiencing another academic year of growth, discovery, and success!

Best Regards–Dr. Rose Shumba

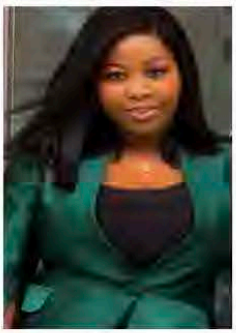
COMPUTER SCIENCE NEW HIRES



"My name is Antoine Thiam, the new Program Management Specialist for the Computer Science Department as of July 1, 2024. I have a bachelor's degree in Public Law from Université Général Lansana Conté de Sinfonia from Guinea (West Africa). I served as a Legal Assistant (paralegal) for the President of the Bar Association in Guinea (Conakry) before immigrating to the USA. I joined Bowie State University in late June 2023, eagerly serving as Project Support Coordinator for the NSF SFS Scholarship program until early October 2023, when I started assuming the Interim Program Management Specialist position. I am the primary contact to support staff, faculty, students, and external partners. I assist faculty members with entering contracts, purchases, partnerships, and associated events, administrative processing, scheduling, monitoring the budget, responding to inquiries about and within the department, and performing other related duties as assigned by the chairperson."

Brenda Johnson is the new Assistant Systems Administrator. She monitors and maintains overall IT infrastructure (network, computer workstations, iPads, MacBooks, printers, etc.). Ms. Johnson installs and configures software applications and monitors computer networks and servers while improving network performance and security. She also maintains an inventory of all computer equipment and peripherals, manages and upgrades computer applications software (Windows, macOS, software development tools, printer utility software, etc.), troubleshoots IT computer and network issues, manages COSC servers, desktop equipment, mobile devices, and BrightSign media device. Our Assistant System Administrator configures equipment and software for our meetings to enable participants to attend remotely; maintains the Active Directory of all domain servers; ensures IT Infrastructure and account usage are aligned with State and University Policies and Laws; and serves as IT liaison between the BSU DOIT Team and Computer Science Department. We are fortunate to have her skillsets supporting our work.

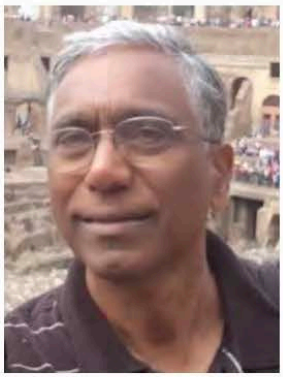
Ms. Bolanle Oji has been the HBGI Program Management Specialist in the Computer Science department since July 2023. She reports to the Chair of the department, the Activity Director, to carry out the goals and objectives of the HBGI project. Ms. joined the university from Sandy Spring Bank, where she was employed as a Universal Banker. She has 20 years of work experience with the United States Embassy in Nigeria before coming to the US. She oversaw the Embassy's Payroll and Vouchering section.



Ms. Adejumoke Adaralegbe is the CyberCorps Scholarship for Service Coordinator. Ms. Adejumoke has a bachelor's degree in Accounting and a master's in Management Information Systems. Ms. Adejumoke is responsible for the Onboarding process of new SFS scholars and the day-to-day management of the scholarship program. She is responsible for preparing reports, scholarship requests, equipment purchases, scheduling meetings, etc.). Ms. Adejumoke has over three years of experience in program management from her previous role as the HBGI Administrative Assistant.

OUR NEWLY MINTED DOCTORS OF SCIENCE IN COMPUTER SCIENCE

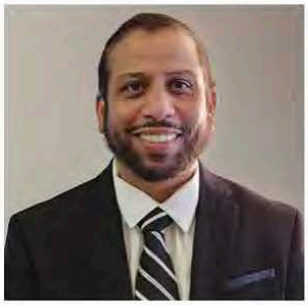
Doctoral student mentors Dr. Josyula and Dr. Mareboyana are pictured below.



Dr. Mahfoudh Mohammad Batarfi
Dr. Anthony Herron
Dr. Hubert Kyeremateng-Boateng

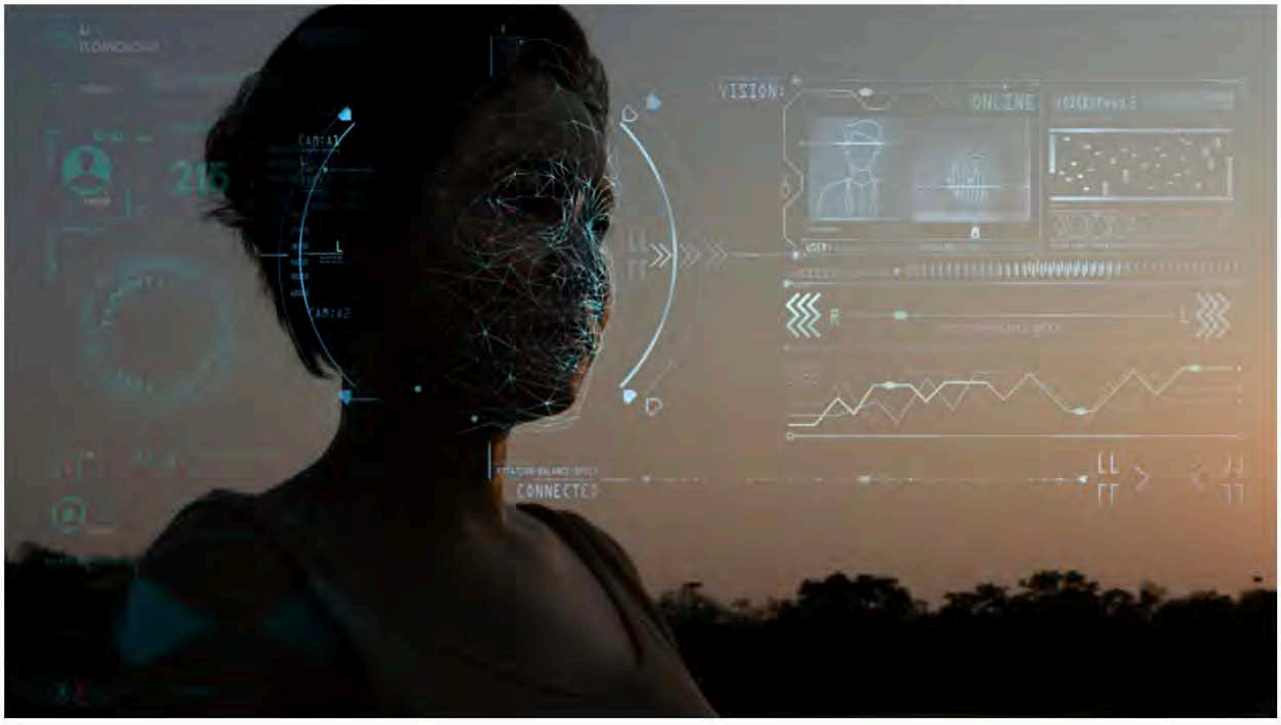
At left, Pres. Breaux congratulates Dr. Herron

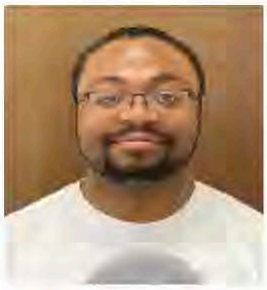
Name: Dr. Mahfoudh M. Batarfi
Advisor: Dr. Manohar Mareboyana



Title: "Enhancing the Performance of VGAE Architectures for Reconstruction High-Quality 3D Faces"

Dr. Mahfoudh Batarfi has significantly contributed to enhancing the performance of Variational Graph Autoencoder (VGAE) architectures for reconstructing high-quality 3D facial data. Accurate 3D face reconstruction is crucial for various applications, but existing methods often face limitations in dataset quality and handling large-scale datasets efficiently. Dr. Batarfi's research addresses these challenges through three key innovations. First, they have developed a comprehensive methodology to generate a diverse and realistic 3D face dataset optimized for effective VGAE training. Second, the research focuses on adapting VGAE architectures with Graph Convolutional Network (GCN) layers, enabling VGAEs to handle large-scale 3D face datasets while maintaining computational efficiency efficiently. Finally, the research evaluates the impact of different GCN layer types within the VGAE framework, analyzing their effects on reconstruction accuracy and computational efficiency. The findings of this work provide valuable insights into improving the reconstruction performance of VGAEs in 3D face reconstruction tasks, advancing the field of 3D face reconstruction methodologies.





Name: Dr. Anthony Herron

Advisor: Dr. Darsana Josyula

Title: Impact of Inferencing with Diverse Knowledge on Task Performance for Active Logic-Based Agents

Dr. Herron's dissertation focuses on the development and analysis of artificial agents whose knowledge and decision-making processes are examinable, alterable, and interpretable by humans, particularly in the context of completing missions in dynamic environments. The success of these missions hinges on the efficient completion of associated tasks and sub-tasks, necessitating the avoidance of futile repetition, recalibration of tasks based on progress assessment, adherence to deadlines, and anticipation of environmental changes. The specific mission addressed in this dissertation involves locating a target within an unknown, dynamically changing environment. Both single-agent settings and collaborative scenarios involving two agents are explored. Efficiency in this context encompasses avoiding redundant searches, accelerating efforts as deadlines approach, course correction to meet task constraints, sharing information about searched locations, notifying partners upon target discovery, and ceasing the search when a partner locates the target. The requirement for real-time trackability of the agents' knowledge and decisions makes Active Logic a natural choice for on-board reasoning, given its ability to reason step-by-step, incorporate new inputs, track time, manage contradictions, and review the past. The Alma/Carne system, with Active Logic as its backbone, serves as the knowledge base maintainer and reasoning engine for the agents discussed in this work. This research involved developing Active Logic axioms to enable agents to complete their deadline-driven target search missions. The research compared ten different axiom sets varying in the knowledge maintained and utilized for reasoning, and examined the efficiency and knowledge evolution of agents operating with each of these axiom sets. The results indicate that incorporating more knowledge into the reasoning process leads to cautious behaviors, and the agent's pace length determines whether cautious or bold behavior results in mission success. Awareness of past and future influences agents to behave more cautiously, and the complexity of the environment dictates the optimal level of caution for improved overall performance. Contributions to the field include the specification of common-sense knowledge for expectation-violation based subtasking and retasking, general contradiction handling, and avoidance of futile redundant actions as Active Logic axioms. Additionally, this work presents a novel application of Active Logic reasoning in robotic searches within unknown environments.

Name: Dr. Hubert Kyerematen-Boateng

Advisor: Dr. Darsana Josyula

Title: Trustworthiness of Neural Network Predictions

Dr. Kyerematen-Boateng's research areas include Artificial Neural Network, Confidence Score, Hyperplane, Latent Features, Latent Space, Machine Learning Models, Neural Network, Penultimate Layer, Prediction Model, Test Samples, Training Dataset, Training Set, Absence Of Signs, Activation Function, Artificial Intelligence Systems, Classification Model, Confidence In the Accuracy, Deep Neural Network, Detection Probability, Frequency Spectrum, Model Confidence, Precision And Recall, Prediction Accuracy, and Prediction Probability. He has published with Dr. Josyula, Dr. Marvin Conn, and Dr. Manohar Mareboyana. He is as an adjunct in the Department and works as a software engineer.

ENHANCING STUDENT SUCCESS THROUGH THE COMPUTER SCIENCE DOCTORAL PROGRAM AT BOWIE STATE UNIVERSITY: SOME RESEARCH IN DEVELOPMENT

The Computer Science Doctoral Program Initiative at Bowie State University provides financial assistance, faculty mentoring, enrichment activities, and research experiences for students who meet the Historically Black Graduate Institutions program (HBGI) requirements.

There is a shortage of African Americans and other minorities in science, technology, engineering, mathematics, and other STEM fields. The program seeks to address this deficiency by equipping eligible students with the education and training necessary to succeed in critical needs STEM areas. Students participating in the program can present their research at conferences, participate in professional development/research workshops, engage in collaborative research with other institutions, and access an expanded library and professional memberships.

YAO HOUKPATI and **ANTHONY HERRON,** HBGI Fellows, interned at Bank of America in the summer of 2020, resulting in the filing of two patents based on their work. These patents have been approved, assigned to Bank of America Corporation, and will remain valid until 2042.

Further details of the patents are provided below.

- US11941115B2 - Automatic vulnerability detection based on clustering of applications with similar structures and data flows - Google Patents
- US11928221B2 - Source code clustering for automatically identifying false positives generated through static application security testing - Google Patents

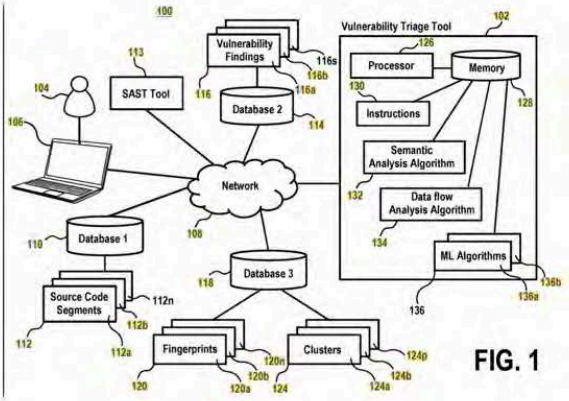
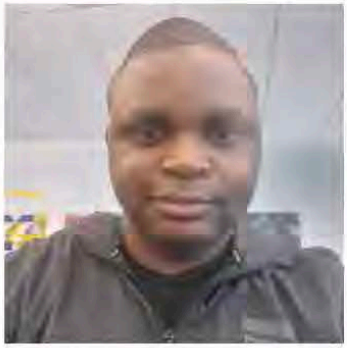


FIG. 1

RUTH OLUSEGUN, ABD

A machine learning-sentiment analysis on monkeypox outbreak: An extensive dataset to show the polarity of public opinion from Twitter tweets S Bengesi, T Oladunni, R Olusegun, H Audu IEEE Access 11, 11811-11826	56	2023
Text mining and emotion classification on monkeypox Twitter dataset: A deep learning-natural language processing (NLP) approach R Olusegun, T Oladunni, H Audu, YAO Houkpati, S Bengesi IEEE Access 11, 49882-49894	18	2023
Enhancing Blockchain Network Scalability Through Parallelization and Aggregation Techniques: A Survey R Olusegun, B Yang 2023 International Conference on Computational Science and Computational ...		2023



AYODEJI OGUNDIRAN, DSc. A goal-oriented visualization approach involves creating visual representations of data tailored to assist investigators in achieving their objectives. Within digital forensics, this approach focuses on developing visual tools and techniques to aid forensic examiners in effectively tracing and collecting evidence. Examiners can enhance their investigative capabilities by prioritizing the visualization of pertinent information, such as patterns, relationships, and anomalies within digital evidence. Testifying in court as a digital forensic expert, i.e., presenting and interpreting evidence to targeted audiences, is as important as the evidence itself. Current models are tailor-made to particular forensic use cases, thus limiting the scope and applicability to other scenarios. These tailor-made models range from knowledge graphs to basic tree models. In digital forensics, where the ubiquity of social media platforms presents new challenges, the need for innovative approaches is pressing. With the rapidly evolving nature of crimes perpetuated on social media, digital forensic examiners need to possess tools to navigate this vast and dynamic landscape effectively.

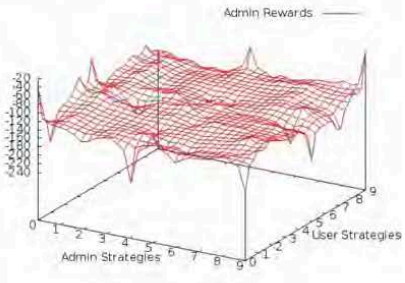
His research aims to propose a flexible and adaptable visualization approach tailored to the demands of social media forensics. Unlike traditional models constrained by specific forensic scenarios, a goal-oriented visualization approach offers versatility across diverse contexts, including those involving social media platforms. By integrating insights from social media into the visualization framework, examiners can better identify relevant evidence, analyze digital footprints, and reconstruct digital interactions, thereby enhancing the efficacy of forensic investigations. This approach seeks to streamline evidence tracing and collection by detecting patterns to guide examiners toward pertinent evidence and potential leads, optimizing its utility in digital forensic investigations.


RESEARCH LABS
AND WORKSHOPS

SECURITY AND OPTIMIZATION OF STOCHASTIC SYSTEMS (SOPSS) LAB

Dr. Vivek Shandilya

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

Dr. Darsana Josyula

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. In October 2024, the Lab received a new round of funding totaling $788,250 through the Department of Defense's (DoD) equipment/instrumentation program to acquire cutting-edge robotic systems that will be used to develop software to conduct search and rescue field operations independently in dynamic settings. The new equipment includes robots with a six-degree-of-freedom arm, twenty smaller robots, and five drones with sensor payloads and supplementary accessories. Specific equipment consists of the Boston Dynamics' legged robot - Spot, Modal AI's VOXL 2 Development drone - Sentinel, and Quanser's educational robots - QCar, QBot, and QArm Mini. The cutting-edge systems are designed to collect multi-modal data, navigate complex terrains, and carry payloads, enabling advanced research in machine learning, perception, reasoning, and agent behaviors.

Photo by Paul Gillespie, Capitol Gazette

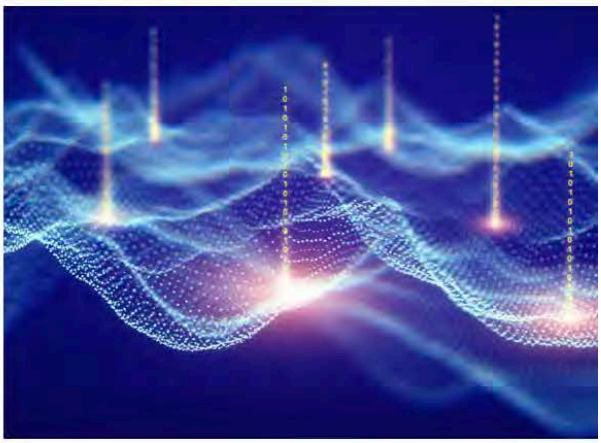
CYBERSECURITY AND VIRTUAL REALITY LAB

Dr. Jie Yan

This research lab 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

Dr. Bo Yang



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 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

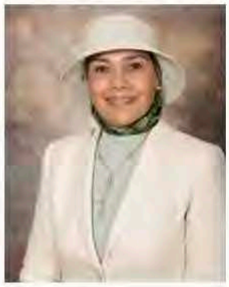
Dr. Soo-Yeon Ji

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. The current research is funded by NSF in collaboration with Old Dominion University. Former research was supported 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

Dr. Sreeni Ramamurthy

Faculty and students work on machine learning for thoughtful, intelligent, and cyber-physical systems research. The research studies 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)

Dr. Hoda El-Sayed

The Center for High-Performance Information Processing (CHIP) (Dr. El-Sayed): 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.

RITA UNIVERSITY AFFILIATED RESEARCH CENTER

BSU's Department of Computer Science has been chosen to undertake two projects as part of a new task order issued by the US Air Force to the newly established Research Institute for Tactical Autonomy (RITA UARC). BSU has secured a total funding of $545,242 to execute these projects over two years. The projects entail task allocation for autonomous agents and content retrieval utilizing large language models. **Drs. Josyula, Yang, and Yan** will lead a team of BSU students and post-doctoral researchers in completing these projects.

MANTECH INTERNATIONAL CORPORATION COLLABORATION

Dr. Sarker and Dr. Shandilya, computer science assistant professors at Bowie State University, are collaborating with ManTech International Corporation. With a shared focus on advancing AI technologies, they are eager to address complex challenges in defense, cybersecurity, and other critical sectors. Leveraging their academic backgrounds, research prowess, and practical insights, the professors closely collaborate with ManTech to develop innovative solutions, refine algorithms, and integrate AI methodologies into projects and initiatives. They serve as a crucial link between academia and industry, and their joint efforts aim to propel cutting-edge advancements in artificial intelligence while effectively supporting the mission objectives of ManTech and its government partners.

2023-24 RESEARCH WORKSHOPS

Workshop Title: Artificial Intelligence explainability and applications

Date: September 8, 2023

Time: 10:00am-12:00pm

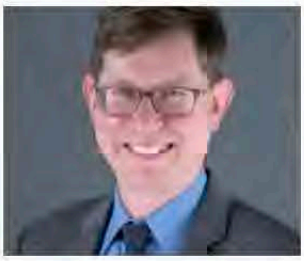
Workshop Abstract: Artificial intelligence (AI), especially its sub-field deep learning, has advanced considerably in recent years. They perform extraordinarily in almost every domain, such as object recognition, speech recognition, language translation, autonomous vehicles, fraud prediction, and drug discovery. Despite its excellent performance, it has limitations in producing a rationale behind its decision. For example, if we provide an image of a cat to a child and ask, what do you think this image is and tell us why, the child may answer that it is an image of a cat because it shows an animal with one tail, one head, and other cat attributes. If we ask the same question to a well-performing AI algorithm, then it can say that it is a cat; however, it will not be able to tell why the image is a cat. This rationale is critical in many high-stakes domains such as security, military, and finance. In this presentation, Dr. Sarker discussed why explainability is important and how we can derive reliable explanations.. Finally, he concluded by showing other research efforts in the broad domain of AI.

Facilitator: Dr.Kamruzzaman Sarker

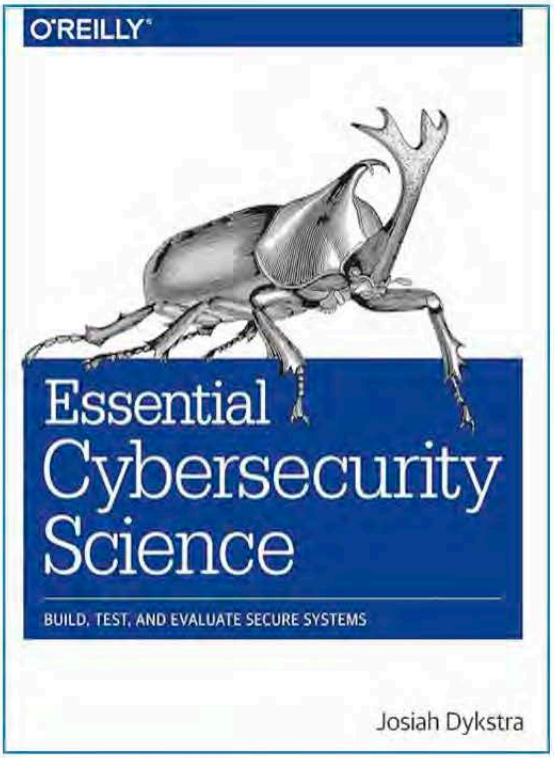
Dr. Md Kamruzzaman "Zaman" Sarker has previous experience as an assistant professor at the University of Hartford. Before joining the University of Hartford, he was a postdoctoral fellow at Kansas State University. He earned his M.Sc. in Computer Science from Wright State University and a Ph.D. in Computer 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.

Workshop Title: Preparing to be an Effective Computer Science Researcher

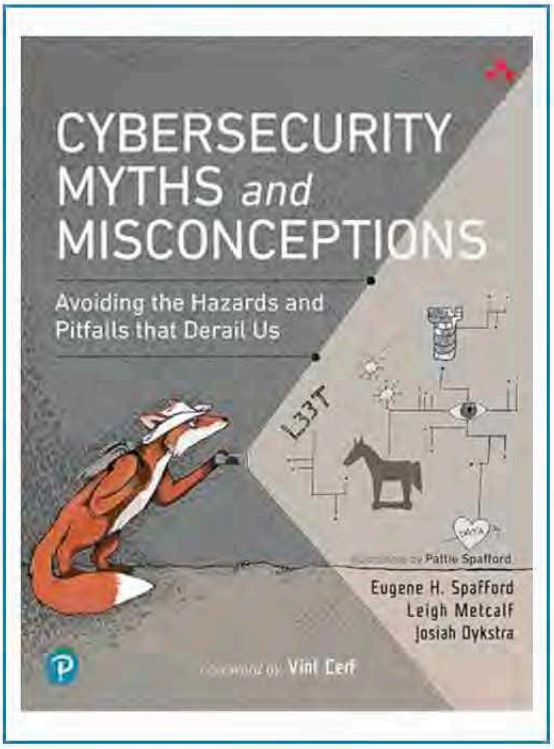
Date: September 22, 2023
Time: 10:00am-12:00pm
Workshop Abstract: This workshop provided an overview of the fundamentals of research methods applicable to the broad field of computer science, with special emphasis on cyber security. Topics included the language of research, research design, quantitative and qualitative forms of analysis, ethical issues in research, documentation of research processes and outcomes, and working with an advisor. Participants became critical evaluators of research, with emphasis placed on engaging the students in analytical reading of research literature in computer science and the application of skills in conducting primary research.



Facilitator: Dr. Josiah Dykstra



Dr. Josiah Dykstra is a seasoned cybersecurity practitioner, researcher, author, and speaker. He is a senior National Security Agency (NSA) leader and owns Designer Security, LLC. Dr. Dykstra holds a Ph.D. in computer science. His particular interest is human interaction with technology. He has studied stress in hacking, action bias in incident response, and the economics of knowing when sharing threat intelligence is more work than it is worth. Dr. Dykstra is a frequent author and conference speaker, including the Black Hat and RSA Conferences. He received the CyberCorps® Scholarship for Service (SFS) fellowship and is one of six people in the SFS Hall of Fame. In 2017, he received the Presidential Early Career Award for Scientists and Engineers (PECASE) from then-President Barack Obama. Dr. Dykstra is a Fellow of the American Academy of Forensic Sciences and a Distinguished Member of the Association for Computing Machinery (ACM). He is the author of numerous research papers and two books, Essential Cybersecurity Science (O'Reilly Media, 2016) and Cybersecurity Myths and Misconceptions (Pearson, 2023).



Workshop Title: Cross-domain Sensing & Modeling for Smart Environments

Date: October 6, 2023
Time: 10:00am-12:00pm
Workshop Abstract: Cyber-physical systems that create smart environments are associated with multiple sensing mechanisms to interact with and understand the physical world. Efficiently aggregating and processing multi-stream data and developing adaptive machine learning models to make actionable decisions is consequential work. Smart sensing devices (such as smartphones, smartwatches, and Google Home) often differ significantly from one data source to another. Most existing machine-learning approaches need to be more adaptive and scalable to handle such variations. Therefore, developing scalable machine learning models under the presence of multi-stream, multi-modal data sources with labeled and unlabeled information is a challenging avenue to investigate. In this talk, Dr. Chakma discussed the underlying causes of data source variations, how to overcome such data variations to process multiple streams concurrently, and how to develop a scalable, robust machine learning model. In addition, he focused on the privacy and security aspects of such scalable approaches and concluded with a review of his current and future research directions.
Facilitator: Dr. Avijoy Chakma

Dr. Chakma is an Assistant Professor in the department. He completed his Ph.D. in Information Systems from the University of Maryland, Baltimore County, in July 2023. He received a B.S. in Computer Science and Engineering from the Bangladesh University of Engineering and Technology in 2013 and an M.S. in Computer Science from Lamar University, Texas, in 2018. Before his graduate study, he had 2.5 years of experience working in the software industry. He has published multiple peer-reviewed journals and conference papers and received the Best Paper Award at the IEEE/ACM CHASE Conference 2022. During his Ph.D., he actively supervised multiple Summer Research Experiences for Undergraduate (REU) students. His research interests are cyber-physical systems, smart health, and machine learning.

Workshop Title: Web Security Threat

Date: October 20, 2023
Time: 10:00am- 12:00pm
Workshop Abstract: The World Wide Web (WWW) is a subset of the Internet consisting of pages a Web browser can access. This workshop aimed to introduce the fundamental knowledge of Web 1.0, 2.0, and 3.0 and present the threats to Web security, including SQL injection, Cross-site Scripting (XSS), Session Hijacking, and Cross-site Request Forgery (CSRF). The workshop provided hands-on activities on Web attacks.

Facilitator: Dr. Kun Sun

Dr. Kun Sun is a Professor in the Department of Information Sciences and Technology at George Mason University. He is the Associate Director of CSIS. He is also the director of Sun Security Laboratory. Kun Sun received his Ph.D. from the Department of Computer Science at North Carolina State University. He has more than 20 years of working experience in both industry and academia. His research focuses on systems and network security. The main thrusts of his research include trusted computing systems, moving target defense, software security, Internet security, AI/ML security, and cloud security. He published over 150 technical papers on security conferences and journals. He served in the TPCs of top security conferences including IEEE S&P, ACM CCS, USENIX Security, and NDSS. One paper won the NDSS Distinguished Paper Award in 2024. He was recognized by George Mason University with the Presidential Award for Faculty Excellence in Research in 2022 and College of Engineering and Computing with the CEC Faculty Excellence Award for Research in 2024.

Workshop Title: Reflection of IBM HPC computing architecture

Date: December 15, 2023
Time: 10:00am- 12:00pm
Workshop Abstract: Dr. Tankeh discussed IBM HPC (High-Performance Computing) and reflected on some of the innovations in design and development. The IBM HPC team developed a radically new approach to the problem of optimizing the performance of HPC systems. These new features were implemented in the software[Linux] and hardware layers that drastically improved the system performance of IBM HPC. These methods were used in many generations of supercomputers, including ASCI Purple and Blue_Gene. He gave an overview of the Architecture and the impact it has on:

(1) MPI performance
(2) IBM Competitiveness in the server business
(3) Open source movement
(4) Cloud computing
(5) AI

Facilitator: Dr Appolo Tankeh

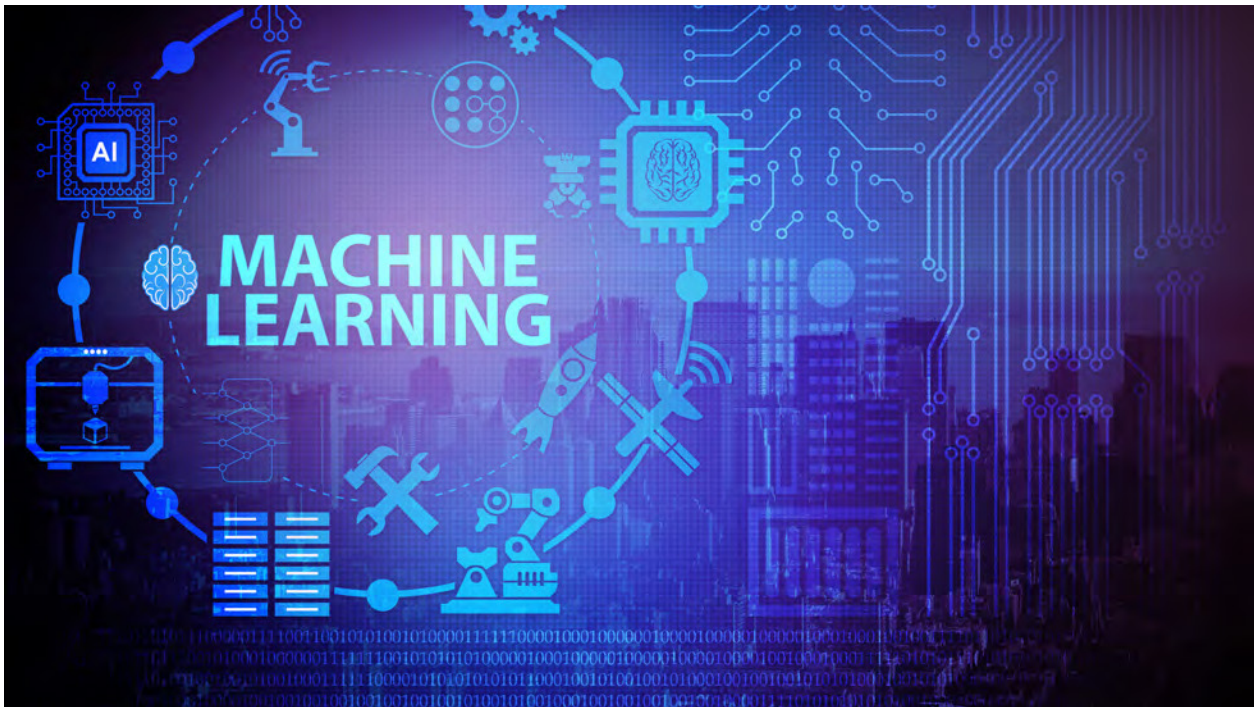
Dr Appolo Tankeh has academic experience as a university lecturer and adjunct professor at universities in London, New York, and Maryland. He held several US patents in HPC(High Performance Computing). His current research areas are blockchain, Web3 programming, Docker/ Container systems, Cloud computing, High-Performance Computing, message passing, File systems, operating systems, and networks. His scholarship also includes topics in concurrency, databases, computer/processor architecture, distributed systems, programming languages, compilers, Browsers, algorithms, artificial intelligence (AI), Dynamical systems, Markov Chains, Quantum Computing, Statistics, and Probability theory. He 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 systems, hypervisor firmware, and the application of queuing systems to message passing. He is an AI expert with many years of experience leveraging AI to solve problems in research, systems, security, and business and finance organizations, including the competitive analysis of the financial performance of firms. After Cambridge/UCL, Appolo 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 US Department of Energy/National Nuclear Security Administration /Advanced Simulation and Computing Program. He earned his MS and PhD in Electrical & Computer Science from Imperial College London. He also obtained an MBA in management from MIT Sloan School of Management.

Workshop Title: **Machine Learning in business: building a recommendation engine**

Date: November 10, 2023
Time: 10:00am- 12:00pm

Workshop Abstract: Recommendation systems constitute the most widespread use of Machine Learning. In this talk, participants discussed constructing and evaluating a recommendation system for use in a business environment. The workshop used specific business case studies, data discovery and exploration, and ML method exploration, training, and evaluation discussion. Learners made recommendations with the engine, defined a performance metric to evaluate its quality, and computed the metric with its uncertainty. The workshop concluded with an initial case study and an interrogation of how well the engine served its purpose.

Facilitator: Dr. Lashkar Kashif



Dr. Kashif is a physicist. He did his undergraduate studies in Yale University, his PhD at Harvard University, and he was a postdoctoral fellow at the European Center for Nuclear Research (CERN). As a member of the ATLAS collaboration in CERN, he contributed to the search and discovery of the Higgs boson, which resulted in the Nobel Prize for Physics in 2013. Dr. Kashif currently heads the Machine Learning (ML) function in Cvent, innovating applications of ML and AI in the events space.

INVESTING IN STUDENT SUCCESS AND A DIVERSE WORKFORCE

SPOTLIGHT ON THE CHAIR

Computer Science Department Chair Rosemary Shumba became the latest Bowie State University faculty member to earn the distinguished Wilson H. Elkins Academic Transformation Professorship.

The Elkins Professorship is awarded to University System of Maryland (USM) professors who demonstrate a solid record of achievement in a recognized academic or professional discipline and a demonstrated ability and continuing desire to lead and inspire undergraduate and graduate students in a range of learning situations.

Dr. Shumba will receive $30,000 from the professorship to fund her proposal to create an experiential learning center for Bowie State. The center aims to give students access to further skills development and professional development opportunities to prepare them for jobs in the competitive tech industry.

"The center's goal is to ensure our students are career-ready for those tech jobs," said Dr. Shumba. "This is my passion; we really want to ensure they're prepared, and the tech experiential learning center will provide another mechanism to reinforce what they have learned in the classroom."

Expanding and growing the cyber security workforce was a major topic discussed by industry leaders, government officials, and BSU computer science chair, Dr. Rosemary Shumba, on Thursday, Sept.12, at the Congressional Black Caucus Foundation's (CBCF) 53rd Annual Legislative Conference at the Walter E. Washington Convention Center. The CBCF's Annual Legislative Conference is the nation's leading policy conference on issues impacting African Americans and the global Black community. Shumba participated in a panel discussion entitled "Tapping Into Untapped Talent: Diversifying the Cyber Talent Pipeline." Cyber security companies and leaders have spent decades attempting to recruit more black talent into the industry, prompting investments in partnerships with Bowie State and other HBCUs, which produce many of our nation's cyber security engineers and analysts.

"Our computer science program puts a heavy emphasis on experiential learning and internships for students, in addition to classroom instruction," said Shumba. "We work very closely with Adobe, other industry leaders, and the federal government to ensure our students have meaningful experiences as interns, which will help prepare them for full-time employment after graduating." Joining Shumba on the panel were Seeyew Mo, assistant national cyber director in the Office of the National Cyber Director; Brian Tippens, senior vice president, Cisco; Nitin Natarajan, deputy director, Cyber Security and Infrastructure Security Agency; Muta Mashack, senior manager Global, Diversity, Equity and Inclusion at Tenable; and Nicole Tisdale, founder of Advocacy Blueprints.

Worldwide, there is a need for over 4 million cyber security professionals, with threats to businesses and governments increasing daily. In the U.S., over 469,000 cybersecurity jobs are currently available.

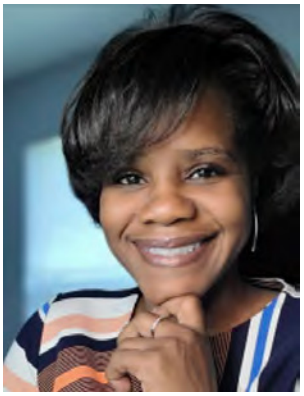
2023-24 PARTNERSHIP WORKSHOPS

Workshop: Building Your Business with the Business Model Canvas

Every organization has at its core the notion that all its functions are designed to provide value to a customer. The question is whether the organization is optimally designed and functioning to provide that value. The ability of an organization to critically assess its proposed value is critical for all members of the organization to engage in activities that provide their value. Traditionally, organizations have gone the route of business planning, but the newest way to design and articulate that value is through the business model canvas. The canvas, developed by Alex Osterwalder, describes the nine building blocks that every organization must be able to deliver to ensure that a customer desires their products and services, can feasibly be built, and can fully demonstrate that the value of the product is greater than the cost of the development.

Presenter: Tyrome 'Ty' Smith has over 25 years of consulting and leading executives and their teams to understand human and organizational dynamics. Currently, he is the Director of Strategic Partnerships for the Common Mission Project, whose mission is to create an international network of entrepreneurs driven to solve the critical challenges of our time. Smith was a senior consultant to the Department of Defense (DoD). As a trusted advisor and coach to senior leaders and teams, he has conducted many senior-level engagements to elicit a strategic focus on revolutionizing how value is conceptualized and executed. He developed an innovative education program for the US Department of Defense, including coaching and mentoring product development teams engaged in an internal incubator. In addition, he has supported several organizations as faculty or entrepreneur-in-residence, including the University of Maryland Innovation Extension Program, StreetCode Academy, and Digital Undivided. The last two are dedicated to supporting founders of Color. He is a much sought-after workshop presenter for topics ranging from unconscious bias to business model innovation.

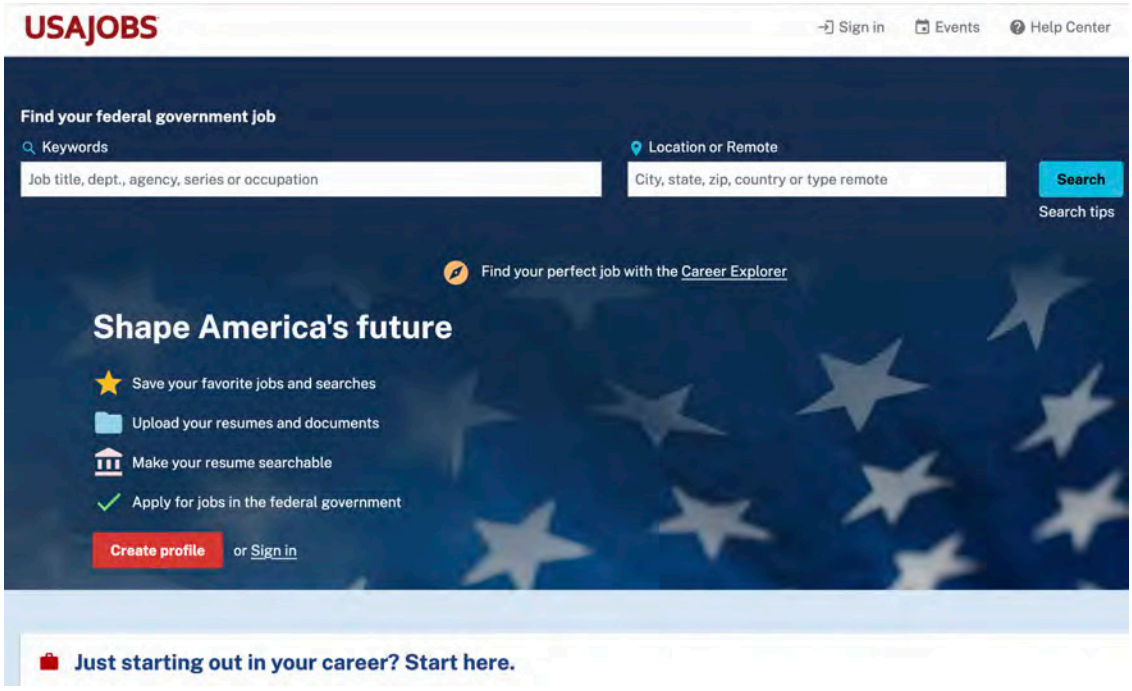
Workshop: See Yourself in Federal Cyber: Unlocking the Federal Hiring Process to Get you Hired!



Ms. Nikkia Henderson, Strategy Lead for Cybersecurity Supply Chain Risk Management, delivered a speech to the students on February 23, 2023. She demystified the federal hiring process, offered tips on USA Jobs, crafting resumes, and identifying federal cybersecurity positions. She also discussed her experience as a cybersecurity professional.

Ms. Henderson has been with the federal government for over 14 years. She is a Senior Advisor at the Cybersecurity Infrastructure Security Agency (CISA). She is the Cyber Supply Chain Risk Management (C-SCRM) Strategy and Governance Program lead within CISA's Cybersecurity Division. Previously, Ms. Henderson was a National Account Manager and Supply Chain Risk Manager Champion at the General Services Administration, where she advised Federal, State, Local, Tribal, and Territorial stakeholders to increase cybersecurity awareness within procurement and acquisitions. Ms. Henderson is a charismatic and energetic public speaker and DEIA advocate. She excels in the art of connecting humans to humans. She holds a Bachelor's Degree in Business Administration/Finance from Strayer University and a Master's in Cyber Policy from the University of Maryland Global College.

Nikkia Henderson is also the President of the Women in Cybersecurity Mid-Atlantic Affiliate, where she serves as a cybHERprenuer and passionate leader dedicated to helping cybersecurity professionals define their vision, mission, and federal career path.



NORTHROP GRUMMAN

CYBERSECURITY DAY

On October 31, 2023, Bowie State University hosted Northrop Grumman for an information session to mark Cybersecurity Day. Cybersecurity professionals from one of the country's top defense contractors gathered for a keynote address and panel discussion to share their experiences and give guidance to students interested in working in cybersecurity on how to enter the field. This occasion was Northrop Grumman's first time hosting an information session on Bowie State's campus.

Dozens of students eagerly filled the tables of the Wiseman Ballroom to see what they could learn. Some key points for students included being willing to take on complex challenges, continuing to learn and sharpen skills, and managing brand and reputation.

Yeneneh Ketema, the senior principal diversity programs lead, was excited about the turnout and said it's essential for Northrop Grumman to increase the diversity of its recruitment channels."That is something that we're keen on growing and developing," said Yeneneh.

Northrop Grumman's visit coincided with National Cybersecurity Awareness Month, observed in October. During the month, government agencies, tech companies, and other organizations highlight the importance of cybersecurity by promoting the most current information about threats to digital networks and the best practices for combatting intrusions from hostile actors.

Different perspectives allow you to push the boundaries of what's possible. Anything we can do to help students define what's possible in their future, that's what we're about.

--Yeneneh Ketema, Northrup Grumman

SITE VISIT TO NORTHROP GRUMMAN, DULLES

SITE VISIT TO NORTHROP GRUMMAN, DULLES

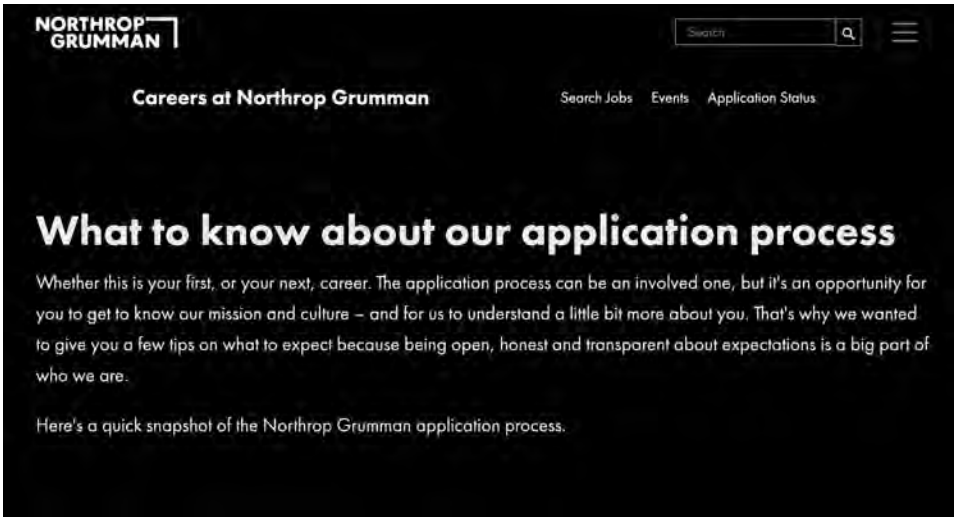
On February 23, 2024, during Northrop Grumman's HBCU Week, Emmanuel Olayemi and other BSU, Howard University, UMBC, and UMCP students visited the Northrop Grumman Dulles site. The students engaged with several panelists who shared insights into their respective roles, career journeys at Northrop Grumman, and the motivations driving their professional pursuits.

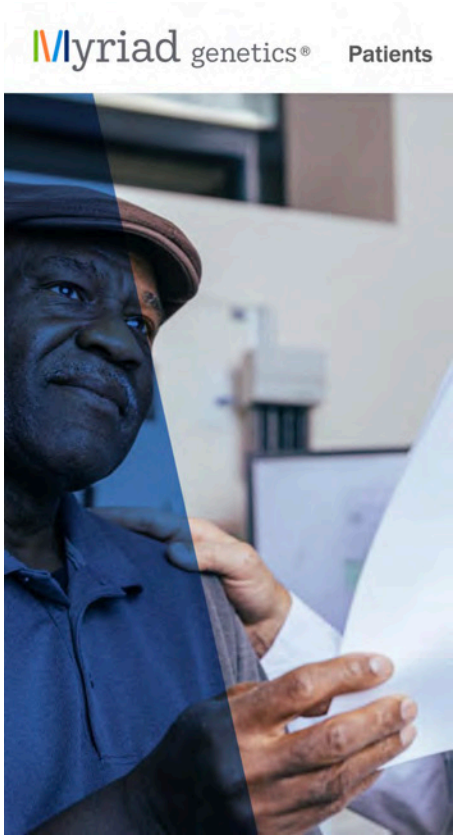
The Northrup Grumman session also allowed students to ask about their professional endeavors and personal experiences. The panels, featuring Mr. Kendall Hayman, Mrs. Charmayne Strayhorn, a staff engineer systems, Ms. Maria Contreras, an associate thermal/systems engineer, and Mr. TaVon Reynolds, senior principal project manager, offered invaluable insights. After the panel discussion, Emmanuel had the opportunity to talk to some of the panelists one-on-one, and they told him "they were getting nervous regarding the questions that he was asking😊."
Emmanuel had the opportunity to connect with an employee who shared her journey from being an applied mathematics major to thriving in the engineering field. Her experiences and perspective inspired me to explore the realm of engineering further and consider it a potential career path.

Later, students were allowed to explore the site and witness firsthand the innovative projects being undertaken by Northrop Grumman. One highlight of the tour was visiting the space station, where Emmanuel gained a deeper understanding of the intricate processes involved in space communication and cargo logistics. Overall, the visit was a transformative experience that expanded his knowledge and appreciation for the field of engineering and the impactful work being done by the Northrop Grumman Space branch. Emmanuel Olayemi is immensely grateful for the opportunity to participate in such an enriching event.

NORTHROP GRUMMAN COMPUTER SCIENCE RECRUITING EVENT

On March 08, 2024 Northrop Grumman conducted Virtual Office Hours with students. The students connected with a Northrop Grumman recruiter in a one-on-one resume review and advising session.





INTERNSHIP OPPORTUNITIES: MYRIAD AND BSU

Myriad Genetics had a virtual info session with the Computer Science students on Feb 16, 2024. The event showcased job/internship opportunities for the students and provided one-on-one sessions to review resumes and inform students about the company. It was an excellent opportunity for the students to network with the Hiring Managers from Myriad and learn about its culture.

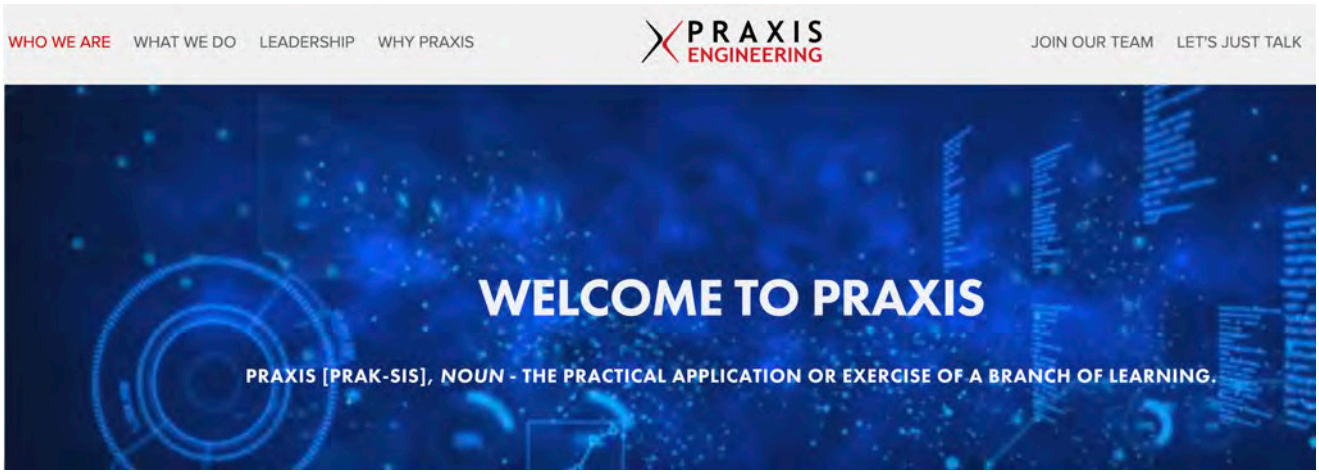
RESUME REVIEW AND ELEVATOR PITCH REVIEW: TIPS FROM BATTELLE HUMAN RESOURCES/ TALENT ACQUISITION STAFF

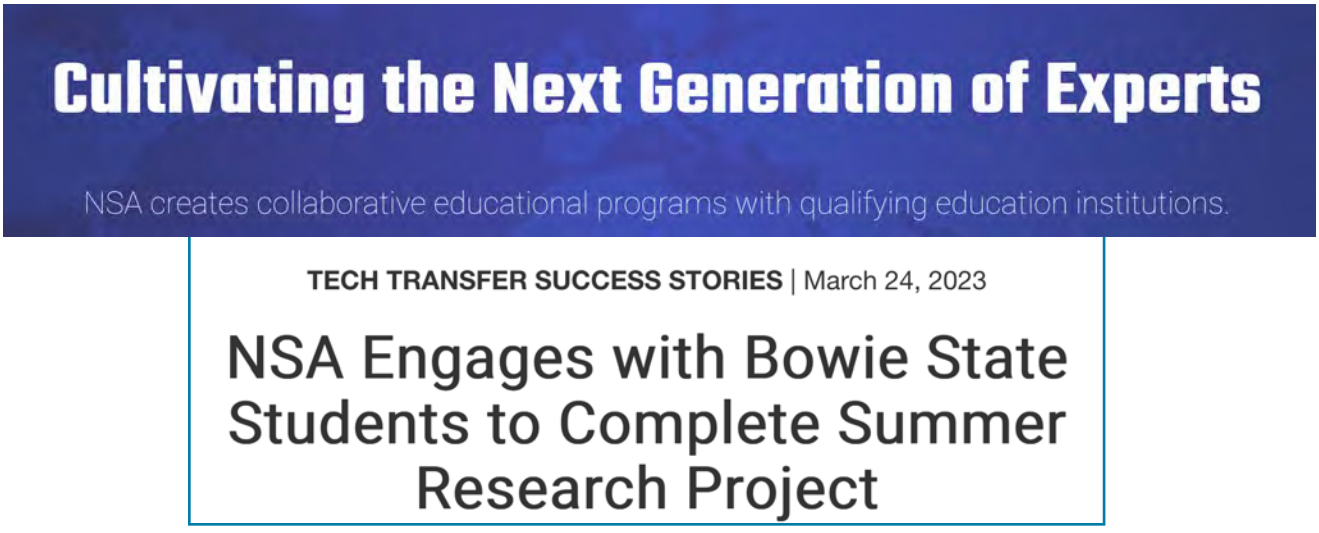
Battelle Human Resources/Talent Acquisition staffer, Sarah Shumick, met with Bowie State University Computer Science students on March 14, 2024. She reviewed resumes, provided useful feedback, and advised students on how to apply for internships and other job opportunities within the organization.

Ms. Shumick is pictured (second from right) with her Battelle colleagues.

ON-CAMPUS VISIT WITH PRAXIS ENGINEERING

Praxis Engineering, a premier software solutions services provider with over 20 years of experience in the intelligence and defense sectors, visited Bowie State University on May 9, 2024. Talented engineers in the organization solve complex problems in high-performance computing, data analytics, AI/ML, and cybersecurity. In addition, Praxis is the prime contractor for two HPC/large-scale analytics programs supporting major Intelligence Agencies. The students learned about Praxis Engineering, explored potential internship opportunities, gained career insights, and connected with two Bowie State Computer Science graduates.





NSA Subject Matter Experts were at Bowie State University on October 18, 2023, to give an overview of the NSA mission, CNO primary priorities, Codebreaker Challenge, and identify available opportunities. The session was open to all interested in Computer Network Defense or Computer Network Attack. About 50 students attended the event.

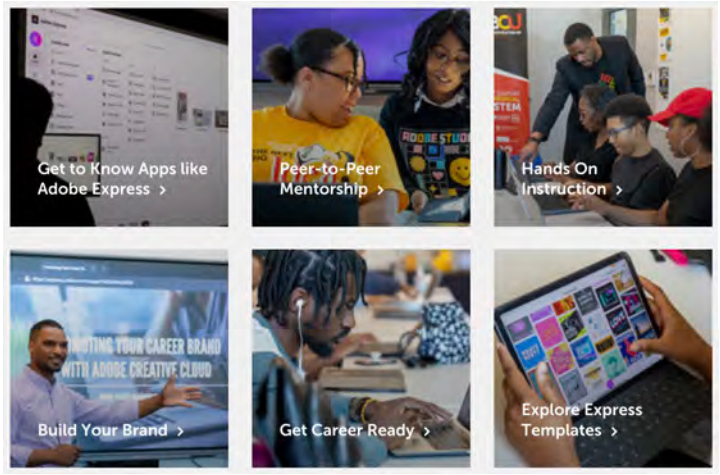
PROFESSIONAL DEVELOPMENT DAY WITH GOOGLE

The Bowie State Computer Science department hosted Google on November 7 and 8, 2023. The two-day event sought to prepare students for technical and non-technical roles with the tech company.

The events featured resume review sessions for 2024 internship positions. It also built on the partnership between BSU and Google, which provided funding for the AI machine learning curriculum at the university.

Ms. Bryanna Barnett, an OpEx and Reporting Financial Analyst at Google, was excited about the event turnout. She mentioned Google has opportunities for various majors and encouraged interested students to apply.

BSU is a participant in the Thurgood Marshall College Fund partnership with Grow with Google Historically Black Colleges and Universities Career Readiness Program.



On October 26, 2023, Adobe conducted a professional day event for BSU Computer Science students. Four panelists shared their experiences and pointers with the students. They advised students that it was never too late or early to get started in cybersecurity. They encouraged students to obtain the necessary certifications and acquire hands-on skills to prepare them for opportunities. The panelists encouraged students to network by contacting people and finding a mentor or sponsor to help them. One of the panelists advised students to look for outstanding programs and take advantage of them. The panelists shared that there are many training opportunities and connections to ensure success in cybersecurity. With hard work and dedication, students can achieve their dreams.


BOWIE
STATE UNIVERSITY
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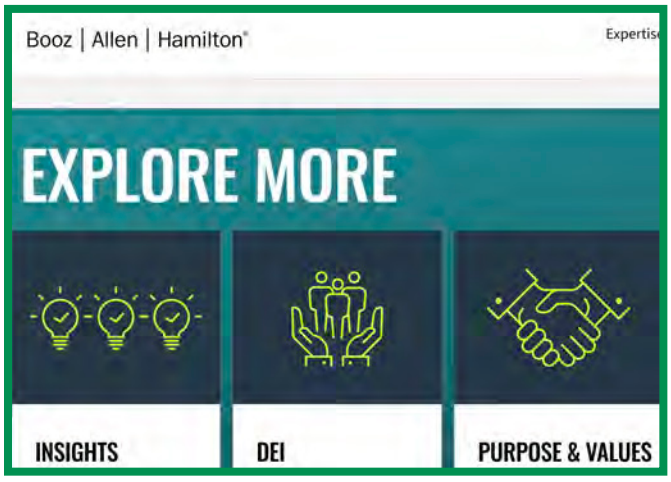
STATE UNIVERSITY

RESEARCH POSTER SESSION & THIRD ANNUAL BOOZ ALLEN HAMILTON CAPSTONE EVENT

On December 11, 2023, Dr. Marvin Conn and Dr. Francis Onodueze, adjunct professors in computer science for BSU's COSC 495 Senior Research classes, seized a remarkable opportunity. Collaboratively, they planned a poster session between their respective classes to enhance student enthusiasm and provide a platform for the students to showcase and discuss their research.

Upon sharing the plans with Dr. Shumba, professor for the COSC 480 Capstone class, her excitement prompted an invitation to merge the COSC 495 poster session with the COSC 480 Capstone luncheon, sponsored by Booz Allen Hamilton. The seamless integration of the Senior Research poster session with the Capstone Showcase presentations at the luncheon resulted in a highly successful event. This unique collaboration allowed COSC 495 students to present their semester-long research in a poster format and gain additional insights into the research projects carried out by the COSC 480 students mentored by Booz Allen Hamilton researchers. Furthermore, it provided an invaluable opportunity for students to network with industry experts in the computer science field. Students presented work to Booz Allen VPs, data scientists, and BSU alum working at the prestigious firm.

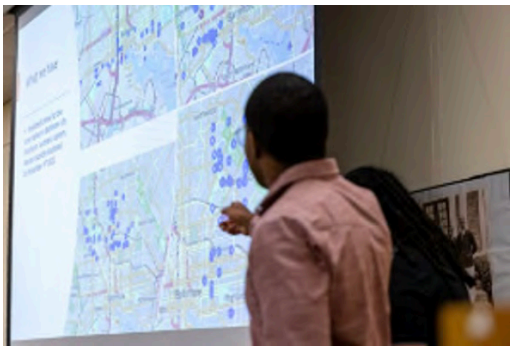


The COSC 495 class research encompassed diverse areas, including but not limited to the application of large language models, gaming theory techniques, mitigation of biases in facial recognition systems, comparison of AI versus manual techniques for code debugging effectiveness, and exploration of novel pathfinding techniques in search algorithms.

The event generated widespread enthusiasm among the students, who were eager to showcase their work and immerse themselves in the vibrant atmosphere of the occasion. Twenty-three students were divided across six teams, and two BAH mentors participated and highlighted the growing collaboration between BSU and one of the nation's premier consulting firms. "They've been really amazing so far," said Dr. Sean Guillory *(pictured at left)*, a cognitive warfare subject matter expert at BAH. "They rose to the occasion. We want to make sure we're giving them the skills to be successful."

Throughout the semester, the students meet with their BAH mentors once a week for 90 minutes to pitch and work on data-heavy and technical projects designed to address issues facing one of the many clients who look to BAH for solutions. One team of students presented a design for an algorithm that the Baltimore Police Department could use to determine the response type and resources needed for any of the thousands of daily calls they receive, depending on the areas the calls originate from. "They're very receptive in terms of how to make their projects a business case, or something the clients would want," said Guillory. "They're not just stuck on the theoretical. They've very much been application-focused."

Beyond allowing the students to test their cumulative knowledge and technical skills, the event provided a preview of what it's like to onboard with BAH as a consultant. The opportunity helped some see what's in store once they graduate. Since the start of the capstone projects in 2020, at least one student from each cohort has continued their relationship with BAH after being offered a position with the firm following showcase participation. BAH couldn't be more satisfied since establishing a working relationship with Bowie State. More than just checking a box, they see the latest push for diversity, inclusion, and equity efforts as vital to ensure the best candidates can answer the call to defend the nation's digital borders.



BAH looks forward to exploring other areas for growth and expansion. "We want to discuss the possibilities of multiple times a year and other departments," said Guillory. "We'll see what works for both sides and keep that relationship going.

NFS CYBERCORPS SCHOLARSHIP FOR SERVICE (SFS)

In Spring 2023, the Department of Computer Science was awarded $2,099,963 by the U.S. Department of Homeland Security and the National Science Foundation (NSF) to launch the Bulldog Cybercorps Scholarship program, an innovative program to build a diverse talent pipeline for the next generation of cyber professionals. Over five years, the program will recruit, educate, mentor, and train scholars to pursue a B.S. in Computer Science with a Cybersecurity Focus.

The Cybercorps Scholarship for Service Program benefits include:

- Up to three years of support for undergraduate and graduate education, stipends of $25,000 per academic year for undergraduate students and $34,000 for graduate students.
- Tuition and education-related fees.
- Professional development allowance of $6,000 per academic year for job fairs and other professional development travel.
- Access to the CyberCorps Scholarship for Service Job Fair, where scholarship recipients meet Federal, State, Local, Tribal, and Territorial recruiters, summer internships, and hands-on experience in post-graduation government service.

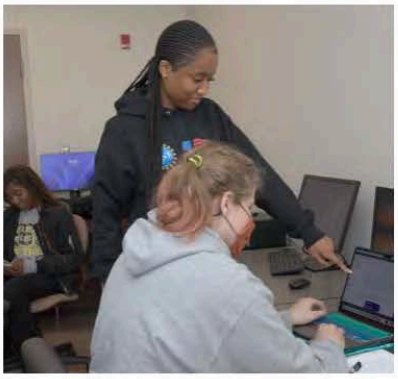
Beyond its financial support, the SFS program allows scholars to engage in cutting-edge research initiatives, participate in mentorship programs, and gain exposure to cybersecurity experts. These activities enhance their knowledge and skills and foster a deep understanding of the field's practical applications. Overall, the SFS scholarship equips recipients with the knowledge, resources, and connections necessary for successful careers in the ever-evolving field of cybersecurity while serving the nation's cybersecurity mission. The Scholarship for Service (SFS) program at Bowie State University supports innovative cybersecurity research. Dr. Jie Yan and scholars aim to develop a user-friendly image forensics tool using deep learning. Dr. Sarker Kamruzzaman and scholars investigate malware detection methods, including transformer-based deep learning. Dr. Avijoy Chakma mentors a project on scalable machine learning models for smart environments. These projects highlight the program's commitment to addressing cybersecurity challenges. Exciting research continues, contributing to the development of future cybersecurity experts. Students from Charles Flowers High School are participating alongside BSU scholars.

COHORT 1 -

Dawn Marshall • Jada Danner • Sage Despeignes • Kamal Epps • Roxan Rockefeller

Pictured below:

Roxan Rockefeller • Jared Robinson • Kamal Epps



CYBERCORPS SCHOLARSHIP FOR SERVICE JOB FAIR

The SFS Job Fair is a signature cybersecurity hiring event, bringing together more than 950 cybersecurity participants from undergraduate and graduate programs and Federal, State, Local, and Tribal government. Attending this event will help bridge the gap between classroom theories and real-world applications. Students can share their experiences, networks, and platforms and gain valuable tools to prepare them to be workforce-ready.

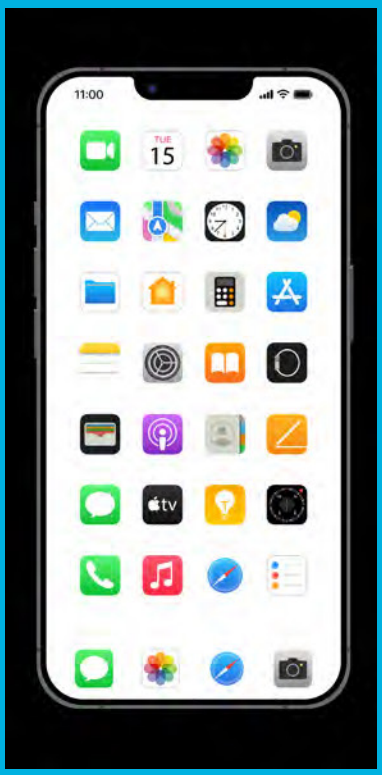
SFS scholars attended the yearly scholarship for service Job Fair in Washington DC in January 2024. The event was an excellent opportunity for the scholars to connect with great minds and organizations. They were also able to network for internship opportunities.

The CyberCorps® Scholarship for Service Program (SFS) was created under the Federal Cyber Service Training and Education Initiative, a component of the National Plan for Information Systems Protection, Co-Sponsored by National Science Foundation and Department of Homeland Security, to enhance the security of critical information infrastructure, increase the national capacity of educating IT specialists in Information Assurance (IA) disciplines, produce new entrants into the Government IA workforce, increase national Research & Development (R&D) capabilities in IA, and strengthen partnerships between institutions of higher learning and relevant employment sectors.

Below, Dr. Shumba with Jared Robinson, Dawn Marshall, Roxan Rockefeller, Jada Danner, and Kamal Epps.

SUMMER CAMPS

The Department of Computer Science hosted five summer camps in the summer of 2024 for middle and high school students. The Department designed each camp for up to 20 participants, with two facilitators assigned per camp. These camps covered various areas of computer technology, aiming to inspire and educate the next generation of computer scientists. Below are brief descriptions of each Camp:



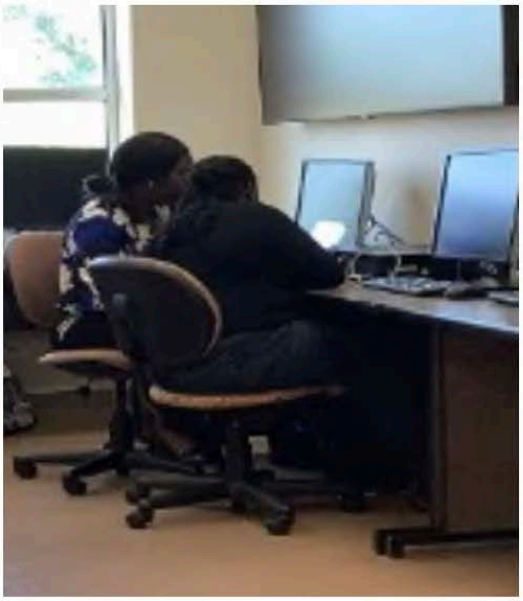
Local middle and high school students participated in the **2024 Apple Code and Create Camp** from June 24-28. For this camp, the middle schoolers learned how to create photos, videos, drawings, and music, all using the Photos, Keynote, iMovie, and GarageBand apps on the iPad.

A**pple Create and Code (Middle School):** Students utilized Apple devices to edit photos and videos, design drawings, and create animations using Keynote. This immersive experience culminated in a comprehensive final project, allowing participants to showcase their newfound skills and creativity. *Facilitator: Profs. Sarah Green & Staphord Bengesi*

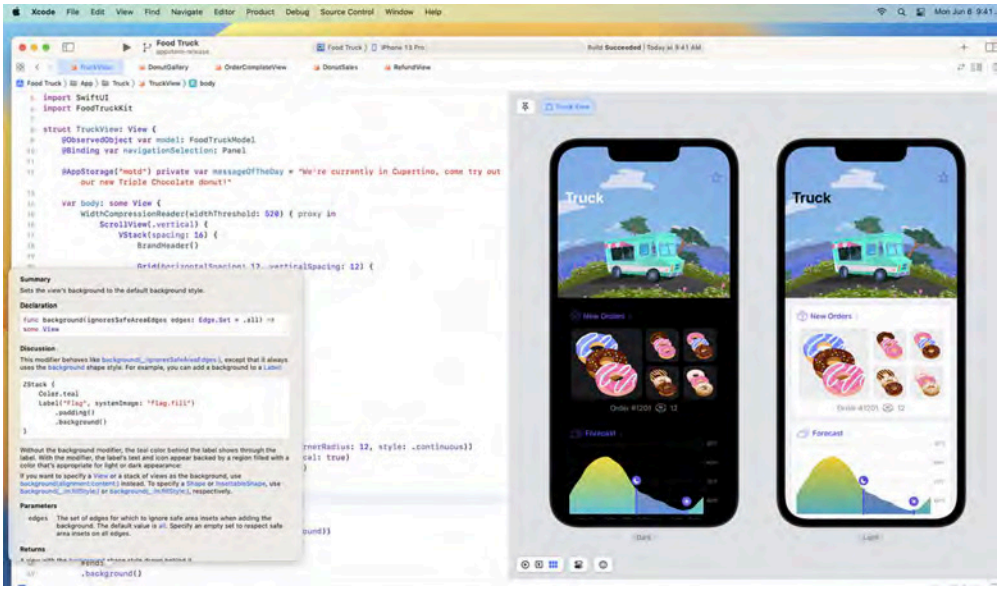
Apple Create and Code (High School):
The high school students in this camp learned how to use Swift and Xcode to design and implement iOS mobile apps. Specifically, those students learned how to create variables and constants, arithmetic and conditional expressions, control statements, loops, and arrays using the Swift programming language. Using the Xcode IDE, the high school students learned how to use the storyboard interface to construct the user interface of the apps that they are designing for iOS. They also learned what user interface elements are available in Xcode: buttons, text, sliders, views, shapes, etc. During the camp, the students were guided by faculty as they received hands-on experience in creating small iOS mobile apps.

Lastly, the high school students spent part of their camp time creating programs to control Sphero robots. They specifically learned how to control the robots' navigation by programming them from their MacBooks. At the end of the camp, the students created a mobile app in Xcode as their final project based on what they learned in the camp.
Facilitator: Drs. James Stigall & Ruth Olusegun

High school students listen to a discussion about creating mobile apps in Swift and Xcode.

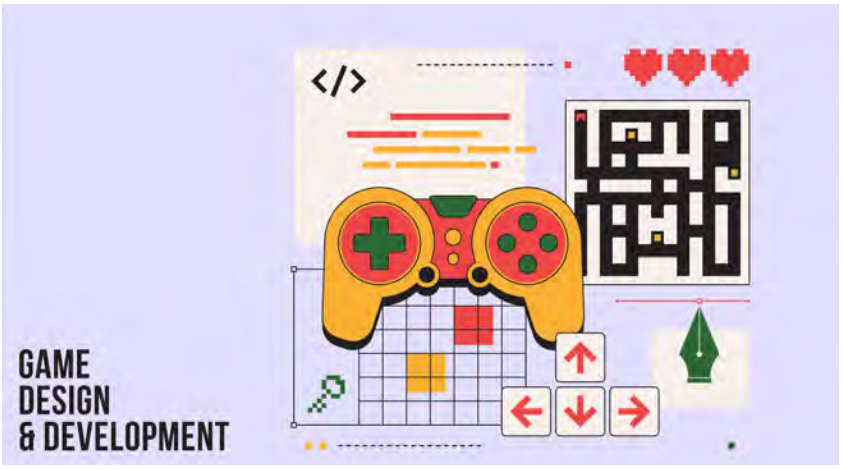


High school students work on their final projects.



App Factory: TBSU Computer Science tailored this camp for high school students keen on mastering JavaScript, landing pages, and clone apps. Essential topics included front-end development, server-side rendering, and dynamic web page creation. Participants learned to craft responsive and intuitive mobile applications and web pages using industry-standard frameworks and tools. Students engaged in a hands-on learning experience through interactive group projects and individual assignments. By the end of camp, they had a robust understanding of web development and mobile app creation and were equipped to design landing pages and clone apps independently.
Facilitators: Tunde Ayodele & Shreya Shah

AI/ML Ninjas: This program introduced campers to the fascinating world of Artificial Intelligence (AI) and Machine Learning (ML) using Python. Hands-on experiences empowered them to develop their own AI and ML applications. Exploring the practical applications of these technologies in everyday life, participants will gain insights into their profound impact on various industries' futures.
Facilitator: Oluwabukunmi Jaiyeola



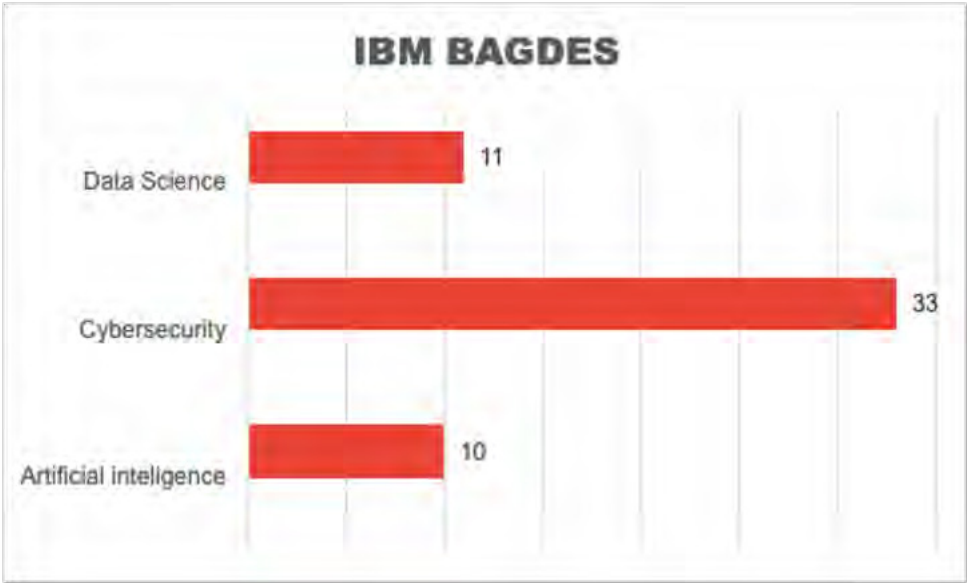
Game Developers: Participants learned the fundamentals of game development, including programming, design principles, and graphics. They had the opportunity to create their games using industry-standard tools and techniques.
Facilitators: Gregory Walters & Malachi Gray

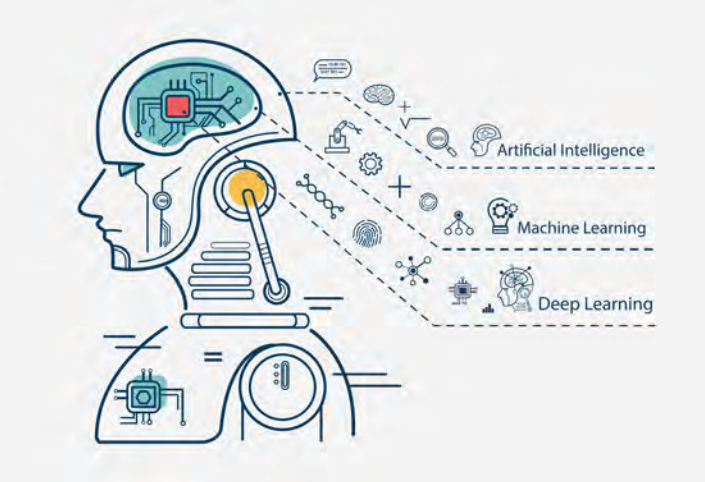
EXPERIENTIAL LEARNING

IBM WINTER WORKSHOP

During the winter of 2024, we conducted a transformative three-week self-paced winter workshop in collaboration with IBM, focusing on professional training in Data Science, Cybersecurity, and Artificial Intelligence. This workshop was an integral part of the IBM SkillBuild program, meticulously designed to provide our students with advanced skills and in-depth knowledge in these high-demand fields. The objective was to empower students with the necessary expertise to thrive in the rapidly evolving tech industry, enhancing their employability and career prospects.
Each participant was required to complete online training and earn two badges in their chosen area of interest—Fundamental and Enterprise levels. This rigorous training ensured that students grasped the basic concepts and better understood more complex topics. The DoE MSEIP grant generously funded the workshop, offering a $300 stipend to any student who completed the program. This financial incentive was instrumental in encouraging participation and ensuring students were motivated to fully engage with the training material and achieve their learning objectives.

The workshop outcome was outstanding: 54 (See the chart below) students enrolled and completed the training successfully, each earning at least two badges. This accomplishment significantly enhanced their professional profiles, making them more attractive to potential employers. The impact of this workshop was evident during the following summer, as over 80% of the alums secured internships. Some students even secured positions with major tech companies, including Apple. This success underscores the workshop's effectiveness in equipping students with valuable skills and highlights the positive long-term impact of such initiatives on their career trajectories.





SEMESTER-BASED UNDERGRADUATE RESEARCH INSTITUTES (SURI)

During the Summer of 2024, the Department set a new record by enrolling 33 students into the Semester-based Undergraduate Research Institute (SURI). Under the supervision of our esteemed department professors, this initiative has grown significantly. We are proud to have had 11 full professors participating in SURI 2024, each accompanied by a graduate assistant. Together, they supervised and mentored three students each, guiding them through solving real-world problems in various technological niches such as Web 3.0, Cybersecurity, Machine Learning, Large Language Models (LLMs), App Development, and more.

The structure of SURI 2024 ensured that students received personalized guidance and mentorship. Each professor and their graduate assistant provided expert knowledge and support, fostering an environment of intensive learning and development. This mentorship model allowed students to delve deeply into their research topics, gaining valuable insights and practical experience. The diversity of research areas covered in the program ensured that students could explore cutting-edge technologies and methodologies, broadening their academic and professional horizons.

Throughout the program, students engaged in hands-on research, tackling complex challenges and applying their knowledge in practical scenarios. This immersive experience allowed them to develop critical thinking and problem-solving skills essential in today's fast-evolving technological landscape. Each research group aimed to publish a paper or article by the end of the program, contributing to academic literature and showcasing their findings, demonstrating their ability to conduct rigorous research, and adding to their credentials as emerging experts in their fields.

The impact of SURI 2024 extends beyond the duration of the program. By participating in this initiative, our students are equipped with essential knowledge and experience in their chosen fields, making them highly competitive in the job market. The collaborative environment fosters innovation and critical thinking, preparing our students for successful careers in technology and research. The success of SURI 2024 underscores our Department's commitment to academic excellence and our dedication to preparing the next generation of leaders in technology and research.

INTERNSHIPS

The Henry Foundation graciously awarded a grant specifically aimed at supporting 12 female students as they undertake tech internships during the summer of 2024. The funding covered the salaries of our students, enabling them to collaborate with our industry partners on solving real-world problems. Eleven students participated in the internship program, following the withdrawal of one student. These internships provided invaluable hands-on experience, pairing our students with Maryland-based companies committed to mentoring them and exposing them to various industry challenges and solutions. Through this financial support, the Henry Foundation has facilitated our students' acquisition of practical, on-the-job experience that complements their academic learning.

The students worked closely with industry professionals at esteemed companies such as Juxtopia, Ai Squared, Apollo Information Systems, RunWei, and Graham Technology. These organizations are committed to providing students with a rich, immersive experience that bridges academic knowledge with practical application. Each student was involved in their assigned projects, gaining insights into the daily operations, challenges, and innovative solutions within their respective fields. Effective mentorship is crucial in helping our students develop the skills and confidence to tackle real-world issues. The exposure to industry practices and problem-solving techniques prepares them for successful careers post-graduation.

We are profoundly grateful to Juxtopia, Ai Squared, Apollo Information Systems, RunWei, and Graham Technology for accepting and mentoring our students this summer. Their willingness to invest time and resources into our students' growth is deeply appreciated. This collaboration enhances our students' educational experience and strengthens the bond between academia and industry. The support and guidance these companies provide pave the way for future partnerships and opportunities, ensuring that our students are well-equipped to meet the demands of the professional world. Through this initiative, we are building a solid foundation for our students' futures while fostering innovation and technological excellence.

INTERNSHIP PLACEMENTS

STUDENT	ACADEMIC STANDING (SPRING 2024)	COMPANY AND ROLE
Roxan Rockefeller	Senior	CISA Cybersecurity and Infrastructure Security Agency - Cybersecurity intern
Ashlei Chang	Junior	SURI
Jared Robinson	Junior	Battelle - Cyber Trust & Analytics Intern
Haley Reyes	Junior	NSF Excellence in Research at the University of Nairobi & University of Arizona
Chibueze Eburuoh	Freshmen	SURI
Bruce Metoyer	Junior	Summer research
Kevin Elias-Mejia	Junior	SURI
Hanaa Salim	Senior	NASA - Web developer/ Software engineer
Daniel Byrd	Sophomore	Allstate - Product Developer
Xavier Raphael Ortiz	Junior	SREFS Program- cybersecurity courses that will prepare me for the certification exams.
Eddy Koundjou	Senior	Worked with Bowie State in the SURI program
Maya Lawrence	Sophomore	SURI program
Kaira Grant	Sophomore	The Department of Energy
Emmanuel Olayemi	Senior	National Geo Spatial-Intelligence Agency as a data analyst & Cybersecurity intern at Nightwing, RayTheon Technologies
Abraham Ewnetu	Senior	Synergy as Sr. Software Engineer.
Anh Phan	Senior	SURI program
Uzochi Anaele	Senior	Medtronic: Software Test Engineer - Surgical Robots
Isaiah Washington	Junior	PluralSight - Software Engineer intern
Devine Chinemere	Junior	Ancestry - Software Engineer Intern
Ixchel Flores	Freshmen	Dr. Ramamurthy
Nia Plair	Sophomore	Visa - Software Engineer Intern
Ashanti Boone	Junior	Apple - Software Engineer Intern
Kamal Epps	Junior	Battelle - SOC Analyst Intern
Nelson Ajibise	Sophomore	Adobe - UX designer
Cedric Videglah	Junior	SURI

STUDENT	ACADEMIC STANDING (SPRING 2024)	COMPANY AND ROLE
Carlos Sanni	Senior	DALY - Software Engineering intern
Temitope Oyemade	Senior	Software Development Engineer at Amazon
Brandon Wiggins	Junior	Bowie State University, Researcher
Christian Mitchell	Sophomore	In-Depth Engineering - Intern Cybersecurity Analyst
Nicole Balay	Junior	Cvent - Software Engineering Intern
Alexis Osueke	Junior	Allstate- Product Engineer
Jada Danner	Senior	CISA (Office of Homeland Security) - Program Assistant
Kimberly Allagnon	Freshmen	Suri
Sage Despeignes	Junior	United States Coast Gaurd - IT Cybersecurity Specialist Intern
Mirabel Enofe	Sophomore	SURI internship , lab student
Haley Reyes	Junior	NSF: Eir: Excellence in Research opportunity at the University of Nairobi, Kenya and University of Arizona
Leslie Selorm Afeawo	Sophomore	Dr Ramasamy Ramamurthy
Devante Hooper	Sophomore	SURI
Joseph Harris	Sophomore	American Society of Hematology. Human Resources
Kimberly Allagnon	Freshmen	Runwei
Jared Robinson	Junior	Battelle - Cyber Trust & Analytics Team
Daniel Adebayo	Sophomore	Fifth Third Bank
Tobiloba Ayodeji	Sophomore	MITRE
Isha Renner	Sophomore	AI Squared - Solutions Architect
Praise Ben	Sophomore	Apple
Jada Danner	Senior	CISA - Program assistant
Tanvi Patel	Junior	Predoctoral fellow
Pius Odhiambo	Senior	Data Science Intern /DOD HBCU MI Internship at AirForce Research Lab(AFRL)
Iteoluwakiishi Ogunbiyi	Senior	Solutions Engineer Intern at Hashicorp
Yasmine Dametare	Freshmen	AI Squared

STUDENT	ACADEMIC STANDING (SPRING 2024)	COMPANY AND ROLE
Oluwabukunmi Jaiyeola	Sophomore	summer Army training
Taj Smith	Junior	Adobe - Cyber Security Intern
Hanaa Salim	Senior	NASA - Software development/engineer intern
Xavier Raphael Ortiz	Junior	SREFS and I am cybersecurity intern
Kevin Elias-Mejia	Junior	SURI
Devine Chinemere	Junior	Software Engineer Intern - Ancestry
Leslie Selorm Afeawo	Sophomore	Dr. Sreenivasan Ramasamy Ramamurthy - SURI
Ihab Ashkar	Freshmen	Research Intern, SURI
Anthony Middleton	Sophomore	Dr. Shandilya- research intern.
Trinity	Sophomore	CodePath
Temitope Oyemade	Senior	SDE Amazon
Bethelihem Berihun	Sophomore	Runwei - mobile and web developer
Isaiah Ladejobi	Junior	Graphics designer (Freelance)
Sidra Mahenn	Freshmen	Infospan Inc. Infospan Inc
Kamal Epps	Junior	Battelle - IT Security Analyst Intern
Desiree Chisholm	Freshmen	DOD - Binary analysts/Software engineer
Lashawna Perry	Freshmen	C-StREAM Fellow/Intern/Mentee in conjunction with USNA
Maryann Sherman	Sophomore	Graham Technologies
Alexis Osueke	Junior	Allstate: Product Engineering intern
Jean Desir	Junior	NSA/cyber
Dawn Marshall	Junior	Battelle, Cyber Trust and Analytics Intern
Dayana Ferrufino	Sophomore	Microsoft: Software Engineer
Melanie Nzaou	Sophomore	Medtronic, Engineering Intern
Fahmina Nur Salma	Senior	WSSC water, AI/AR Applications Developer

STUDENT	ACADEMIC STANDING (SPRING 2024)	COMPANY AND ROLE
Jacob Komi	Sophomore	SURI program and mentee researching about AI Bias Detection.
Eddy Koundjou	Senior	SURI research on Web3 Development Tools
Nicole Balay	Junior	Cvent Software Reliability Engineer Intern
Oluwatobi Akeju	Sophomore	AI Squared , Solutions Architect
Kaira Grant	Sophomore	Interning with Professor Ramamurthy creating an AI chatbot
Malachi Gray	Sophomore	SURI student researcher
Elija Modesi	Junior	SURI
Daniel Byrd	Sophomore	Allstate

COMPETITIONS, CONFERENCES, AND CLUBS

A team of Computer Science students recently competed in the HBCU C² App Design Challenge Showcase, held April 11 and 12, 2024 in Nashville, Tennessee. The purpose of the App Design Challenges was for HBCUs to design a mobile app to run on iOS devices that targets an overlooked group within their campus communities. The BSU team developed an app named AccessBSU to help users with varying disabilities locate campus areas that are inaccessible to them and report them to officials if needed. For the showcase, the team competed with teams from 29 institutions to vie for the grand prize of having an entire lab of Apple devices, all provided to the winning institution for free.

Pictured right, Dr. James Stigall (faculty advisor), Kaira Grant, Jaylen Smith, Chenilyn Espineda, and Nia Plair.

COMPUTER SCIENCE STUDENTS PARTICIPATE IN THE INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST

The International Collegiate Programming Contest (ICPC) is an algorithmic programming contest where undergraduate students in a team of three solve real-world problems. ICPC regulates global algorithmic programming competitions annually to advance top performers to the pinnacle of programming events: The ICPC World Finals. In recent years, approximately 60,000 teams from around the globe have competed for one of the coveted 140 placements at the ICPC World Finals to compete with the best of the best and vie for a shot as the World Champions! North America is one of eight ICPC Regions around the globe that sends teams to the World Finals. There are four Divisions (North America Central, East, West, and South) within North America. There are 11 Regional Contests (Mid-Central, North Central, East Central, Greater New York, Northeast, Mid-Atlantic, Southeast, South Central, Pacific Northwest, Rocky Mountain, and Southern California). Recently, more than 2,500 teams from North America compete annually in programming events to progress to the NAC, with approximately 16 teams advancing to the World Finals, depending on performance. This competition fosters teamwork, creativity, and innovation and tests the ability to perform under pressure. It is the world's oldest, largest, and most prestigious programming contest. (Source: University of Central Florida).

In 2023, six universities–James Madison University, Christopher Newport University, John Hopkins University, Virginia Tech University, UNC Chapel Hill, and Wilkes University–hosted the Mid-Atlantic regional contest. Eight Computer Science department undergraduate students led by faculty advisor Dr. Avijoy Chakma represented Bowie State University (BSU) for the first time in its history in the International Collegiate Programming Contest (ICPC) mid-Atlantic regional.

The undergraduate students were Oluwabukunmi Jaiyeola, Chukwuemeka Obizuo, Ezekwesili Okonkwo, Rameses Peyton, Chibueze Eburuoh, Malachi Gray, Robert Johnson, and Deonte DeBrew. Most are now in their second and third years of study.

The BSU team traveled four hours south of Bowie, Maryland, to Newport, VA, on Feb 23 to participate in the regional contest and stayed at the Newport News Marriott at City Center, three miles away from the contest venue. On the following day, the day-packed competition program started at 9.30 AM with the registering of all the contestants and coaches, followed by the opening remarks from Dr. Roberto Flores (local organizer), Dr. Anton Riedl (Chair, Department of Physics, Computer Science and Engineering), and ICPC local site chair. Contestants were given instructions, briefed about the rules and policies, and a short practice session that mimics the actual competition. After lunch, the contest started at 2.05 PM (EST) across all six mid-Atlantic regional sites.

The contest was five hours long, testing the contestant's mental endurance and performance under pressure. A total of 13 challenging problems were given. Throughout the competition, BSU teams showed a character of unwavering perseverance, determination, and willpower to solve these problems. Two BSU teams successfully solved three, and another team solved four of the 13 problems. The winning team from the College of William and Mary solved nine problems. At the end of the contest, all the participants, coaches, and local organizers enjoyed dinner and a prize-giving ceremony. The top three teams got the ticket to participate in the US Nationals, which will take place at the University of Central Florida from May 25-30.

Bowie State University, Virginia Commonwealth University, University of Redmond, College of William and Mary, and Christopher Newport University participated in this mid-Atlantic regional contest. Teams from the University of Maryland College Park, John Hopkins, University of Virginia, Drexel University, and Virginia Tech University participated at different mid-Atlantic regional sites. The BSU teams have gained invaluable experience from their participation by sharing their experiences with other teams and coaches.

The BSU team looks forward to taking the initiative to foster its own internal competitive programming contest and prepare more elite programmers who will represent the BSU in the upcoming competitions. The BSU teams acknowledge and thank the computer science department chair, Dr. Shumba, campus leadership, administrative assistants, Bulldog Coders Club leadership, and all the associated campus stakeholders for making this trip successful.

BOWIE STATE SHINES AT GOOGLE HACKATHON

Praise Ben reports: Bowie State University students are making their mark in the tech world, with a strong showing at the recent Google Hackathon 2024 held in Washington, DC. Graduate student Fahmina, representing the Women in Computer Science Club (WICS), shares her experience and highlights the impact of this event on Bowie State's students. Fahmina and her teammates Kishi and Kaira embarked on a thrilling journey at the hackathon. During the virtual kick-off, the team formed and received guidance from their dedicated mentor, Mr. Frank Lamar from Google.

They developed a unique mobile app called Amble through brainstorming sessions and meticulous planning. This innovative app caters to individuals seeking a peaceful and personalized way to navigate their surroundings.

The competition saw participation from 24 teams across four HBCU institutions. The Bowie State contingent displayed exceptional talent and collaboration, with two teams securing top positions in the first round. Ultimately, Bowie State achieved an impressive second and third-place finish in the competition.

The team received well-deserved recognition, including Google Pixel Tabs and Google Nest Audio devices, as a testament to their hard work and ingenuity. Beyond the accolades, the Google Hackathon provided students with invaluable opportunities. They gained access to the latest technological tools, interacted with Google employees, and received insights into current market trends. This immersive experience fostered valuable problem-solving, teamwork, and communication skills, preparing them for future success in the tech industry.

Fahmina credits the support of the Bowie State University computer science department, particularly Dr. Shumba, for guiding students toward this opportunity and providing unwavering support throughout the process. Her participation in the hackathon has ignited a passion to participate in similar initiatives and further represent Bowie State University on a global platform.

This remarkable achievement exemplifies the talent and dedication of Bowie State University students. Their success at the Google Hackathon shines a light on their individual abilities. It showcases the university's commitment to providing a nurturing environment that fosters innovation, collaboration, and success in the evolving tech landscape. ClariFi, a legal document translation and clarification website, placed second, and Amble, an app that displays routes based on noise level, placed third.

Second Place Winners: Tobi Ayodeji, Nia Plair, Mia Travers, and Uzo Anaele (ClariFi)
Third Place Winners: Fahmina Nur Salma, Kaira Grant, and Iteoluwakiishi Ogunbiyi (Amble)

Kaira Grant, Tobi Ayodeji, Nia Plair, Uzo Anaele, Fahmina Nur Salma, and Iteoluwakiishi Ogunbiyi

Front Row: Nia Plair, Mia Travers, Fahmina Nur Salma, Tobi Ayodeji, and Kaira Grant Back Row: Dayana Ferrufino. Chenilyn Joy Espineda, Uzo Anaele, Nelson Ajibise, Iteoluwakiishi Ogunbiyi, Melanie Nzaou. Not pictured: *Praise Ben, Daniel Byrd, Alexis Osueke*.

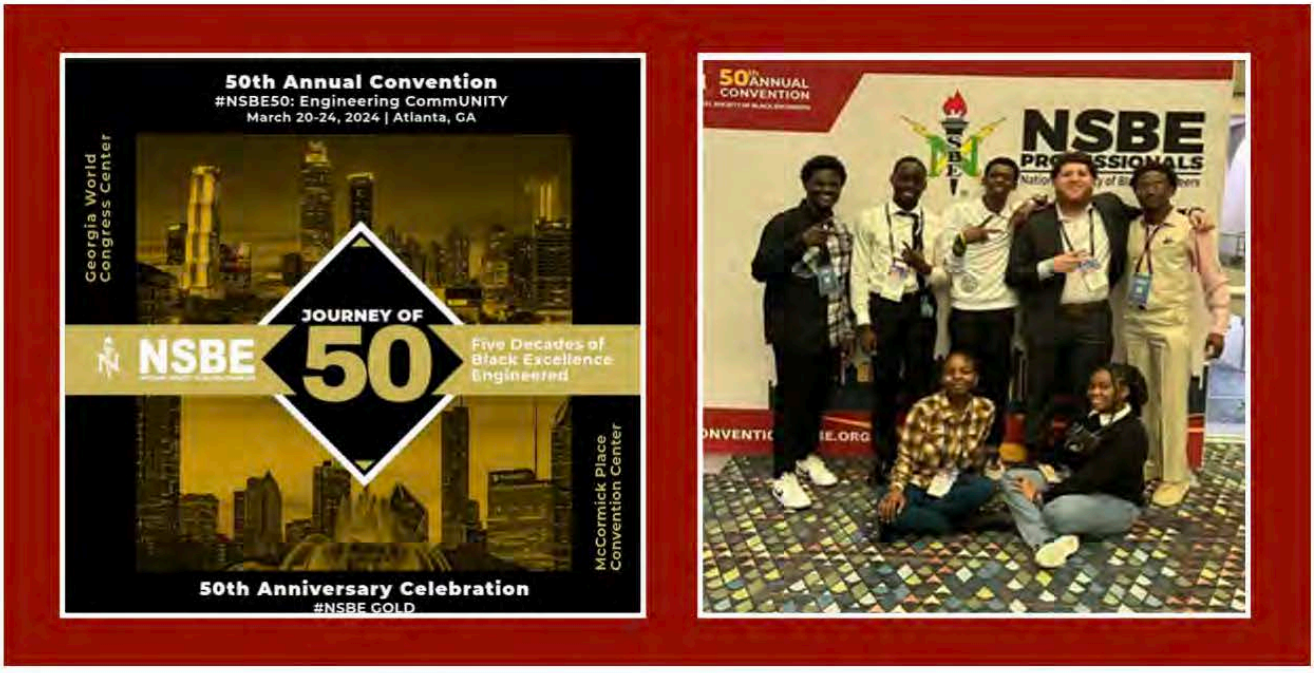
THE NATIONAL SOCIETY OF BLACK ENGINEERS (NSBE) 2024 CONFERENCE IN ATLANTA

May 2024 graduate Emmanuel Olayemi and six of his colleagues recently had the opportunity to attend the NSBE 24 conference in Atlanta, which marked his first attendance at such an event. It was an enriching experience where students engaged with leading companies and students from diverse backgrounds across the United States. This is Emmanuel's account.

I encountered a memorable moment during the conference that I would like to share. I've been actively pursuing Northrop Grumman for some time, aiming to secure an interview and ultimately work with them due to my genuine interest in their values and impactful work. Although I narrowly missed the opportunity to schedule an interview, I managed to catch a recruiter's attention by wearing Northrop Grumman socks. This small connection led to a conversation that ended with an interview card in my hand. Unfortunately, all interview slots were filled when I reached the booking desk. Despite this setback, I remain determined and optimistic, knowing that persistence is key. I extended my best wishes to the individual in front of me and secured the last spot.

Shortly after, I visited the L3 Harris Technologies booth to learn more about their work and share my experiences. Through a tailored pitch that aligned with their company values, I secured an impromptu interview, marking my first on-the-spot interview experience.

At the conference, I also had the pleasure of meeting new friends, Efua Emuan and Patrick Wande, who share my passion for cybersecurity, artificial intelligence, and mathematics. Our discussions revealed common interests and experiences, further enriching my networking experience at the event.



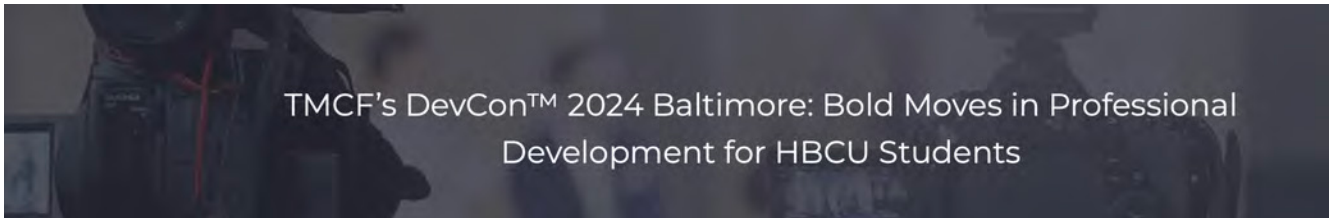
HBCU SHADOW A LEGISLATOR DAY AT THE MARYLAND STATE HOUSE, 2024

On Thursday, February 15, 2024, Mr. Olayemi had the honor of participating in HBCU Shadow A Legislator Day at the Maryland State House in Annapolis. He is standing beneath the Maryland State flag at the rear of the photograph. The following is his account.

During this event, I had the invaluable opportunity to engage with Governor Wes Moore, gaining insights into his gubernatorial experience and daily routine and receiving his wise counsel regarding the role of our nation's future leaders.

Observing the legislative process firsthand, I witnessed the meticulous procedures and deliberations involved in passing bills before they were made public. This experience offered a profound understanding of the intricate workings of our government.

Furthermore, I was privileged to shadow Delegate Shaneka Henson, who graciously shared her efforts to advance legislative initiatives, including one bill she is championing. She sought my perspective on the feasibility and implications of her proposed legislation, provided constructive insights, and expressed her intention to consider them in her decision-making process regarding the bill's advancement.



THURGOOD MARSHALL COLLEGE FUND 2ND DEVCON

Thurgood Marshall College Fund (TMCF) successfully hosted its 2nd DevCon™, a professional development conference presented by Medtronic in Baltimore, MD, from Wednesday, March 6, through Saturday, March 9, 2024. DevCon™ Baltimore installment drew participation from 400 HBCU students from Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. Under the theme "Bold Moves," students were inspired to innovate.

Crafted by the TMCF Ventures team, this leadership conference is an invaluable early touchpoint for Historically Black College and University (HBCU) students in their first and second years. Attendees immersed themselves in professional and leadership training, engaged in hands-on workshops, gained insights into business essentials, and enjoyed direct access to TMCF's esteemed corporate partners and opportunities. On the following page is a first-person narrative of the experience.

I was blessed with the opportunity to attend this year's conference, consisting of a session explaining the importance of voting for newly registered voters and an opening session presented by Wells Fargo, where I received a TMCF Wells Fargo scholarship!

Medtronic employees shared their stories and gave insight on the journey from an HBCU to the workforce and dealing with adversity throughout the trip.

ZS shared the importance and application of emotional intelligence, detailing how it affects our learning styles and tendencies as students.

Savings Collaborative shared with me the importance of financial literacy and how do deal with credit, debt, loans, and interest. This session shared the importance of building a portfolio that will set me up for my future to obtain financial independence.

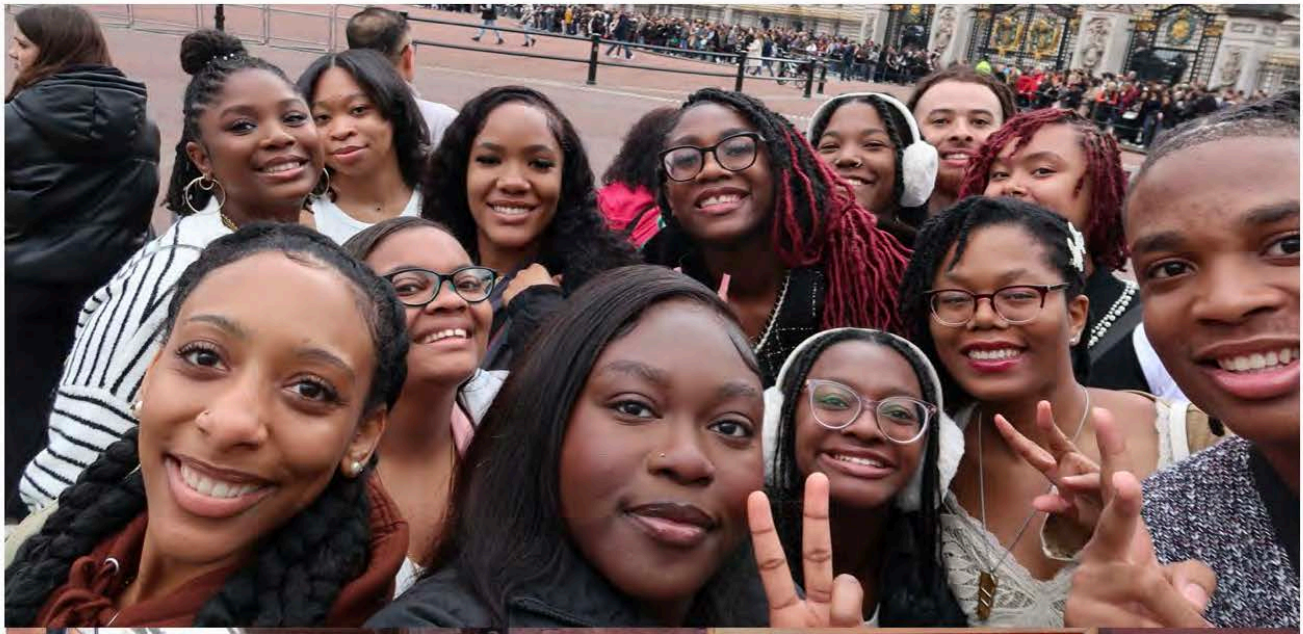
Wells Fargo held a resume workshop that helped identify how to tweak and tailor my resume through some dos and don'ts of writing an effective resume.

Adobe brought in an exceptional guest, TJ Rhodes, who shared his experience leading up to his role at Adobe. I learned the importance of listening to those wiser than me, what makes a good candidate to work at Adobe, and how to deal with problems that may seem impossible to overcome.

We ended the night learning how to Dine Like a Diplomat, where we learned the etiquette of eating and the virtues of professional behavior at the table. I am excited to see what the rest of the conference offers and the opportunities it can provide me!

SPRING 2024 IN LONDON

Over Spring Break, two Women in Computer Science members, Roxan Rockefeller and Nia Plair, studied abroad in England for the week. Roxana received the opportunity through her McKenzie Scott scholarships. Nia received the opportunity through the Honors Program. They went on various educational tours in England and explored the cities of Bath, London, Oxfordshire, and Brixton. The London tours included visiting landmarks such as Big Ben, Tower Bridge, the Tower of London, and the Crown Jewels. On Monday, after visiting my Chinatown, they watched MJ: the Musical with Bowie State, starring award-winning alum Myles Frost as Michael Jackson.



Roxan and Nia also worked with a community organization, Journey to Justice, and participated in an informational workshop and tours. They participated in a self-guided tour of Bath after visiting Bath Spa University as a part of an Adobe Exchange project. The group visited the Stonehenge megalith and Neolithic village. The trip's objectives were to allow students to represent and support BSU excellence, learn about the Black presence in Britain, and expand their notions of what is possible. The study tour ended with a visit to the British Museum and a Black History Walks tour by author Tony Warner.

BULLDOG CODERS REPORT

The 2023-24 academic year was very proactive and focused on improving students' ability to build algorithms and solve problems. Our approach this semester was to separate the inexperienced and the experienced and concentrate on developing skills accordingly. For the inexperienced, we worked on introducing them to concepts in computer science or deepening their understanding. We introduced some coding problems while teaching them how to use core programming tools like control statements and data structures. For the experienced, we gave them coding interview problems to sharpen their existing skills and share their solutions.

The majority of our meetings consisted of this split-target approach. In other meetings, we had both parties working together to solve problems. The goal was to have the upper-level students help teach. This method helped first-year students understand specific issues and helped more advanced students practice explaining the problem-solving process in preparation for technical interviews. We also attended a coding competition. Although we didn't win, it gave the people who attended experience with coding in a competitive setting. We plan to go to another next semester and make this a common occurrence with the club. Every semester, we attend one to two coding competitions or hackathons. The new president is Mélanie Nzaou Nziengui.

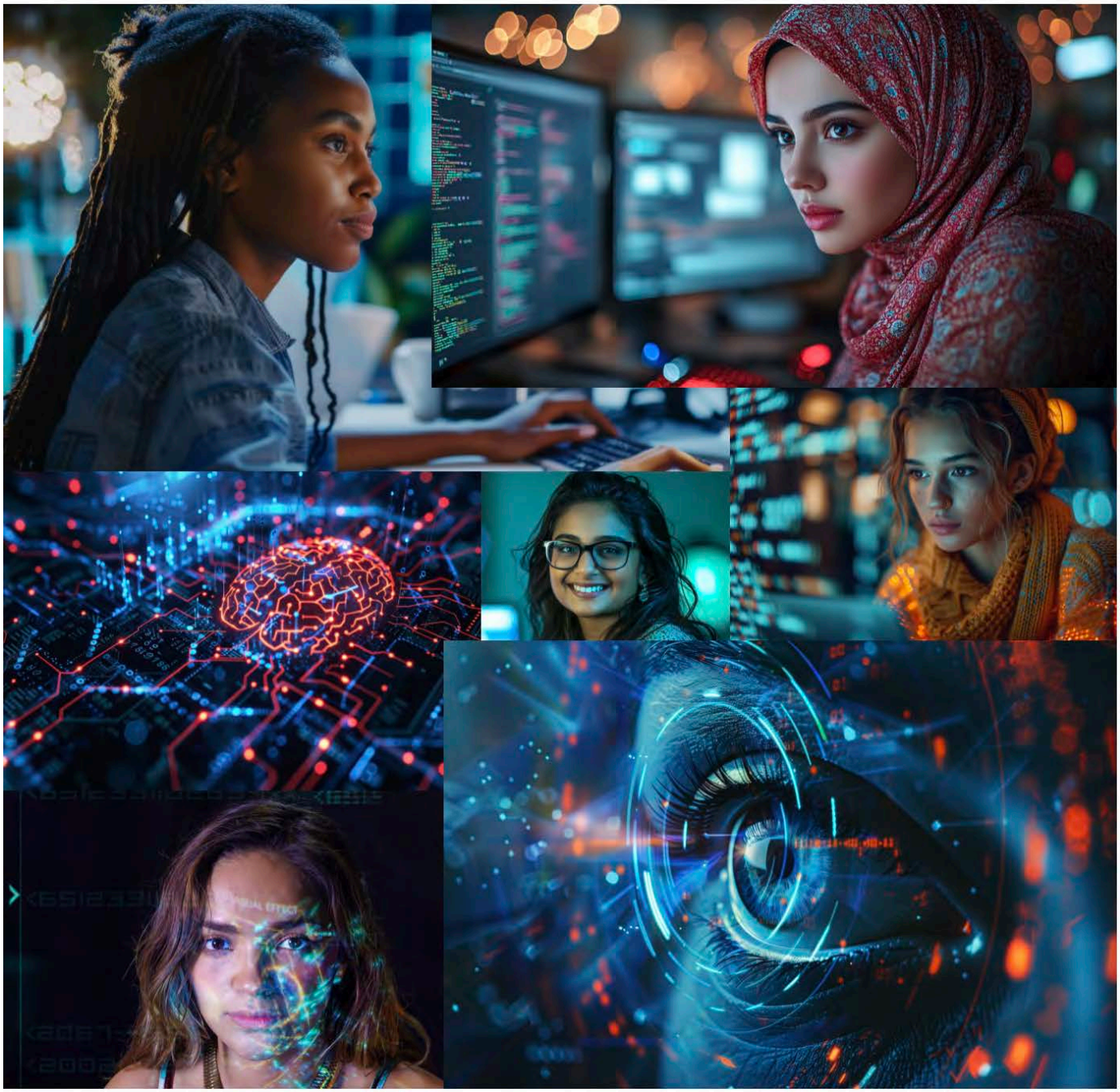
BOWIE STATE UNIVERSITY 1865

DEPARTMENT OF COMPUTER SCIENCE

CYBERCLUB

Drs. Jie Yan and Leveque Levec mentored the BSU Cybersecurity Club during the Fall 2023 semester. The club aims to incorporate active, hands-on training on industry cybersecurity tools and provide activities and experiences to enhance and build upon cybersecurity knowledge gained inside the classroom. The club is open to students from all majors and at all levels, from bachelor's to doctorate, enrolled at Bowie State University. Attendees are challenged to enhance their knowledge of the critical advances in the industry as they learn hands-on skills, build their resumes, and explore relevant expertise for cybersecurity internships and career opportunities. The club's activities explored critical, current, and cutting-edge technologies related to network security, digital forensics, ethical hacking, secure coding, reverse engineering, quantum computing, IoT, and AI. Our platform further aims to provide a showcase for the remarkable research achievements of undergraduate women. We highlight their contributions to the field through presentations, multimodal publications, and other avenues and celebrate their successes. By doing so, we inspire future generations of women in computer science to pursue their research aspirations with confidence and determination.

NURTURING WOMEN IN COMPUTER SCIENCE



WOMEN IN COMPUTER SCIENCE (WiCS)

The mission of the Women in Computer Science (WiCS) organization is to support, promote, and retain women in Computer Science by providing opportunities for personal and professional development, social interaction, and outreach. This platform offers a social, technical, and networking community where members can

- Highlight and showcase the valuable contributions of women in Technology,
- Advance the research and learning outcomes for women in the Department of Computer Science, and
- Engage in mentoring the next generation of female computer scientists.

Another primary goal is to contribute towards improving diversity and inclusion for underrepresented persons within the tech industry. BSU WiCS works to inspire young girls to enter tech by completing outreaches to local high schools and middle schools and promoting how fun tech can be on social media platforms like TikTok and Instagram. There are chapters of WiCS throughout the world.

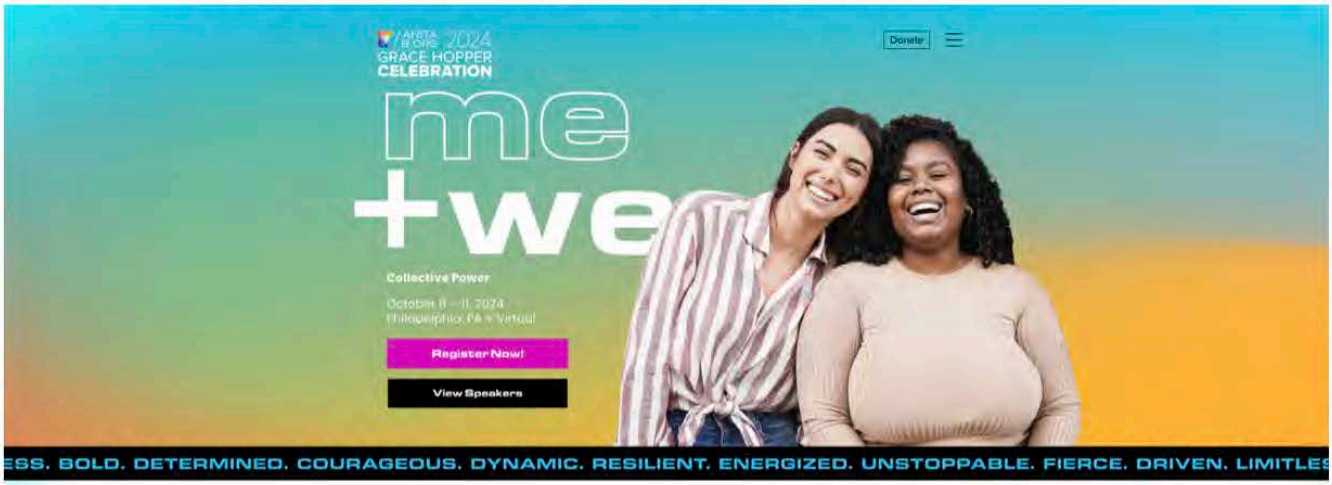
WiCS - FALL 2024 EVENTS

The Women in Computer Science organization was excited to participate in the Grace Hopper Celebration of Women in Computing 2024, October 8-11, 2024. The group engaged in dynamic workshops, insightful panels, and networking opportunities with industry leaders. From seasoned professionals to students, WiCS members will gain inspiration, develop skills, and foster lasting connections.

WiCS Pageant: October 3, 2024

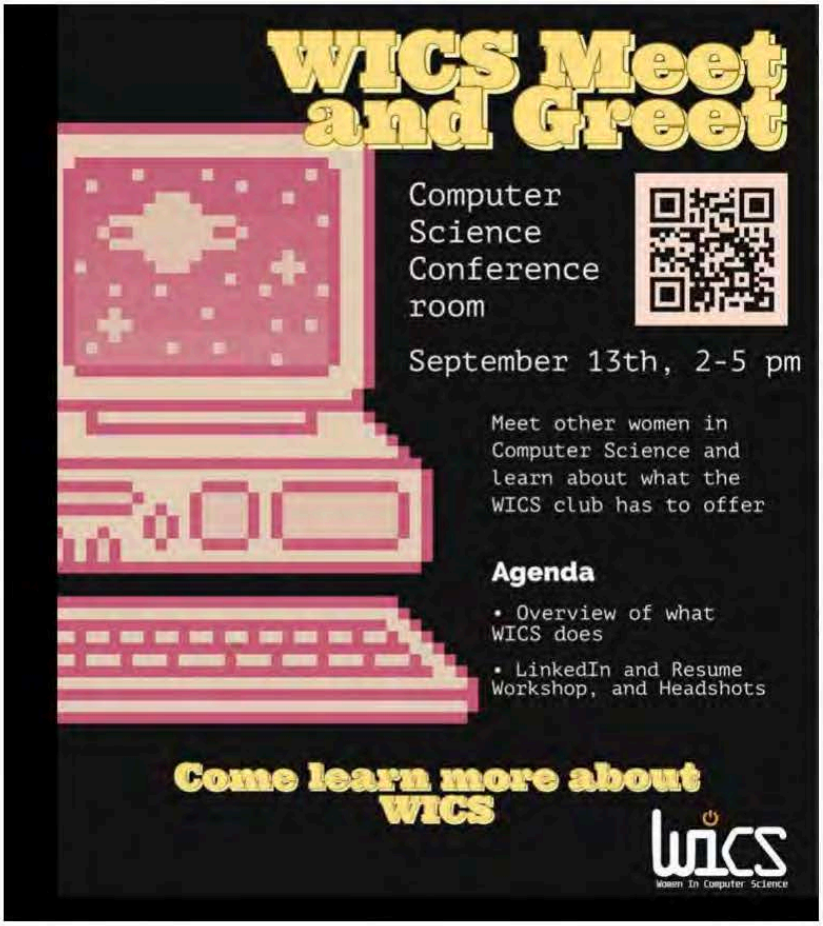
The Miss WiCS Pageant was an exciting and empowering event designed to celebrate the creativity, talent, and technical skills of our active Women in Computer Science (WiCS) members. This unique competition allowed participants to embody the spirit of WiCS as they competed for the title of Miss WiCS, becoming a royal representative for our community. Throughout the pageant, contestants showcased their unique brand by delivering compelling pitches that reflected their personal and professional journeys in the tech industry. Participants also engaged in thought-provoking interview segments, answering questions posed by fellow WiCS members and demonstrating their insight, confidence, and passion for technology. A key highlight of the pageant was the code interpretation segment, where contestants demonstrated their technical prowess by interpreting code live, showcasing their problem-solving skills and familiarity with programming concepts.

GRACE HOPPER CELEBRATION, PHILADELPHIA 2024



An important and influential pioneer in the history of tech, Rear Admiral Grace Hopper was one of the first women to receive a doctorate in mathematics. Her expertise allowed her to join the U.S. Naval Reserve during World War II to work on the Mark I computer. After the war, she remained in the U.S. Navy as a reserve officer, working with the more advanced Mark II and Mark III computers. An important and influential pioneer in the history of tech, Rear Admiral Grace Hopper was one of the first women to receive a doctorate in mathematics. Admiral Hopper also helped create the first compiler for computer languages and was the first female recipient of the National Medal of Technology in 1991. In 2016, she was posthumously awarded the Presidential Medal of Freedom for her many contributions to computing. To honor Grace Hopper's legacy and inspire future generations of women in tech, Dr. Anita Borg and Dr. Telle Whitney founded the Grace Hopper Celebration (GHC) in 1994. The AnitaB.org flagship event brings women's research and career interests in computing to the forefront, highlighting women's contributions to the tech world.

WOMEN IN COMPUTER SCIENCE - ACADEMIC YEAR 2023-24 EVENTS



FALL 2023

September 13: First WiCS meeting:

To kick off the 2023-24 school year, the WiCS club hosted its first meeting. The new leadership for WiCS and the new members were introduced. There were over 20 women in attendance. The meeting consisted of sharing the upcoming events for the year, introductions to the Department chair, and a resume workshop.

September 23-26, 2023. GRACE HOPPER IN ORLANDO, FL

Eighteen Bowie State WiCS members visited Orlando, Florida, to attend Grace Hopper September 23-26. Grace Hopper is the world's largest gathering of women technologists. The conference is designed to bring women's research and career interests to the forefront of the computing world. The WiCS members participated in workshops, interviews, and events hosted by large companies. Northrop Grumman offered two internships. The club members also had the opportunity to network with the United States Chief Information Officer, Clare Martorana.

Students leaving for the trip.

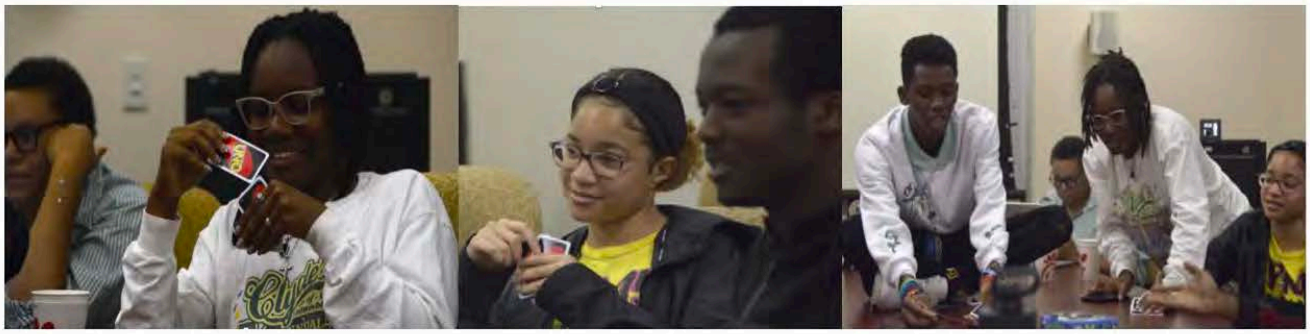
Students with CIO Martorana at GHC 2023.

October 21-22: WiCS Attended Technica

Technica is the world's largest hackathon for underrepresented genders in tech. The hackathon is hosted annually at the University of Maryland, and is a weekend jam-packed with swag, workshops, networking, and awesome projects!

October 26: WiCS hosted CS game night

Creating a community is one core aspect of the Bowie State University Women in Computer Science club. At least once a month, the WiCS club hosts a social event for the Computer Science department to foster a close-knit group of students. On October 26, the club hosted a Computer Science game night, and 30 other students were in attendance.



October 27: WiCS hosted a bowling night for CS

To help Computer Science students enjoy some downtime, the WiCS hosted a bowling night at the local bowling alley. Over 20 students attended.

November 16: WiCS hosted CS Friendsgiving

With final exams around the corner, WiCS wanted to host an event to help students relieve stress and celebrate the upcoming holiday. Over 40 Computer Science students attended the Friendsgiving. The event included food, games, a scavenger hunt, and other fun activities.

December 1: Research Clusters final meeting

Several WiCS members were divided into clusters to work on research throughout the semester. On December 1, the research clusters met to discuss their research ideas and share any discoveries.

December 5: WiCS visited Roosevelt High School

On December 5, Bowie WiCS collaborated with Roosevelt High School's Girls Who Code Club to host a panel. Seven of the WiCS members shared their experiences with college and internships. Six Roosevelt High School members attended the session.

December 8: 2023 Christmas Party

To end the year and prepare for finals, the WiCS club hosted a Christmas party for the Computer Science Department. There were over 30 students in attendance. This event consisted of board games, video games, a gingerbread house contest, Christmas carols, and other fun events for all students.

SPRING 2024 EVENTS

February 1: WiCS Research Clusters Kick-Off

Weekly Friday Meeting from Feb 9th, 2024 - May 10th, 2024, to discuss research

The Research Clusters' primary objective is cultivating interest and curiosity for research among undergraduate women in computer science. We are committed to empowering these students to delve into research topics relevant to their interests and aspirations. Our initiative facilitates this journey by providing a robust support system. We connect undergraduate women with invaluable resources such as experienced research mentors and specialized workshops. These mentors serve as guides, offering insights and expertise to navigate the complexities of the research process. Our workshops are tailored to provide the soft skills and knowledge necessary for conducting meaningful research.

We especially emphasize the importance of networking within and outside the confines of our community. By leveraging the workshops and fostering connections, we create spaces for students to share their experiences, learn from one another and their mentors, and forge valuable relationships with peers and professionals at-large. Exchanging ideas and insights enriches their research pursuits and broadens their perspectives. Our platform further aims to showcase the remarkable research achievements of these undergraduate women. We highlight their contributions to the field through presentations, multimodal publications, and other avenues and celebrate their successes. By doing so, we inspire future generations of women in computer science to pursue their research aspirations with confidence and determination.

February 9: WiCS Weekly Meetings

WiCS had Weekly Friday Afternoon meetings that ran throughout the semester. These meetings recapped members' achievements from the week and explored the future events members would like to see.

February 15-17: WiCS at BEYA Conference

February 23: Google DC Hack-A-Thon

As described early, four Bowie Computer Science Department teams competed in Google's Hack-A-Thon hosted in the DC office. All of these teams were comprised of WiCS members, and two of those teams placed in the competition. #Googlehackathon. #WomeninComputerScience. *See pages 54-55.*

February 26 - March 1: Door Decorations

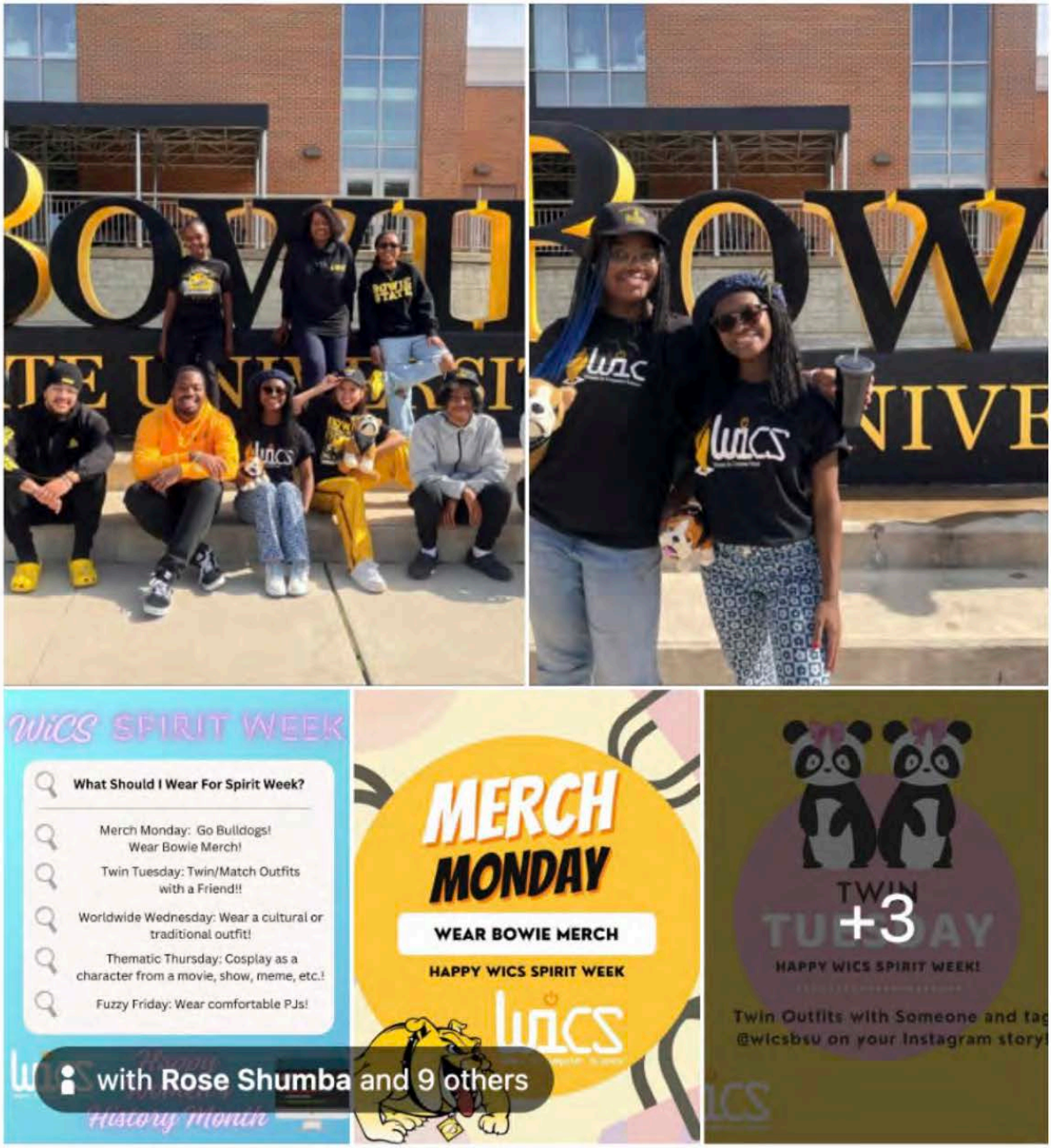
During the last week of February, some WiCS members decorated the doors of the Computer Science building to commemorate Black History Month, which was crucial for several reasons. Firstly, it served as a visual representation of inclusivity and diversity, highlighting the contributions and struggles of historically marginalized communities. By adorning doors with relevant imagery, quotes, or symbols, buildings become more than just structures; they become platforms for education and awareness, fostering a sense of belonging for all individuals, regardless of race. The end goal was to channel this towards women in tech. They paved the way for WiCS to become even more successful and influential, and we wanted to show our appreciation by making a small gesture as a thank you. Without them, we wouldn't be where we are today, and we are forever grateful to have the opportunity to shed light on the women who made it possible for all of us on behalf of the Women in Computer Science. The mastermind of the project was senior Computer Science major Jer'Mia Travers.

March 1, 2024: WiCS Weekly Meetings

March 4 - March 8, 2024: WiCS Spirit Week

Leadership in WiCS hosted a spirit week to celebrate Women's History Month. Over 30 students dressed up each day of the week, competing for a prize for most spirited. The spirit week culminated with a movie night where students watched Legally Blonde to celebrate women.

#WiCS #internationalwomensday #womenshistorymonth
#spiritweek #canva



Nia Plair reports that each day was associated with a different theme that students across campus could engage in.

For Merch Monday, students were asked to wear their Bowie State University gear and show their Bulldog Pride.

For Twin Tuesday, students were told to find a friend or multiple and match outfits.

On Worldwide Wednesday, students could wear traditional attire to represent their ethnicity and nationalities, showcasing the diversity of our Bowie student population.

Due to many students having an interest in cosplay, Thematic Thursday was for students to cosplay as a show or movie character.

Lastly, the week ended with Fuzzy Friday, when students wore their pajamas and enjoyed a movie and game night in the Computer Science building.

March 15, 2024: WiCS Weekly Meetings

March 16, 2024 - March 24, 2024: WiCS Study Abroad over Spring Break

Over Spring Break, five WiCS members participated in study abroad programs hosted by Bowie State. As shared earlier in this magazine, two WiCS members toured London to engage in activities exploring UK perspectives on social justice, including workshops and tours with Journey to Justice, a Black history tour of London, and a visit to Oxford University to study its connections to the slave trade. Three WiCS members visited Portobello, Panama, to participate in Congo cultural workshops, visits to the Embera community, tours of Old Panama City and the Panama Canal, and hikes in Panama's lush environment.

April 5: Visit with Coach Angela Harris

For the April 5 WiCS weekly meeting, guest speaker Angela Harris visited members. Angela Harris is an award-winning leadership coach for black women in tech in the DMV area. Members engaged in meaningful conversations about important conversations such as internships, grad school, navigating corporate work culture, and imposter syndrome.

April 6-7: WiCS Win Big at MorganHacks

Several Bowie Computer Science students visited Morgan State to participate in MorganHacks. Eleven WICS members were a part of six teams that competed in this hackathon. One of our members placed first place with their project, Signyfy, speech-to-sign language glasses.

April 11: WiCS competes in the Bulldog Pitch Competition

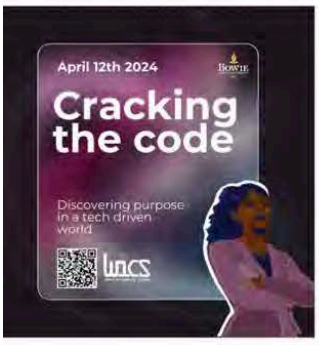
A team of four WiCS members competed in Bowie State's Bulldog Pitch Competition. They made it to the semi-finals with their idea. They pitched BoldCode, a hackathon. WiCS aimed to host the hackathon and contribute to the diversification of the technology field.

April 12: WiCS participates in the C2 Swift Competition

Five Bowie State's Computer Science department members created a team to compete in the C2 Swift Competition. Three of these students were WiCS members. The group was selected to present their idea in Nashville, Tennessee. They presented AccessBSU, which aimed to enhance campus accessibility and included a feature to alert campus police during emergencies.

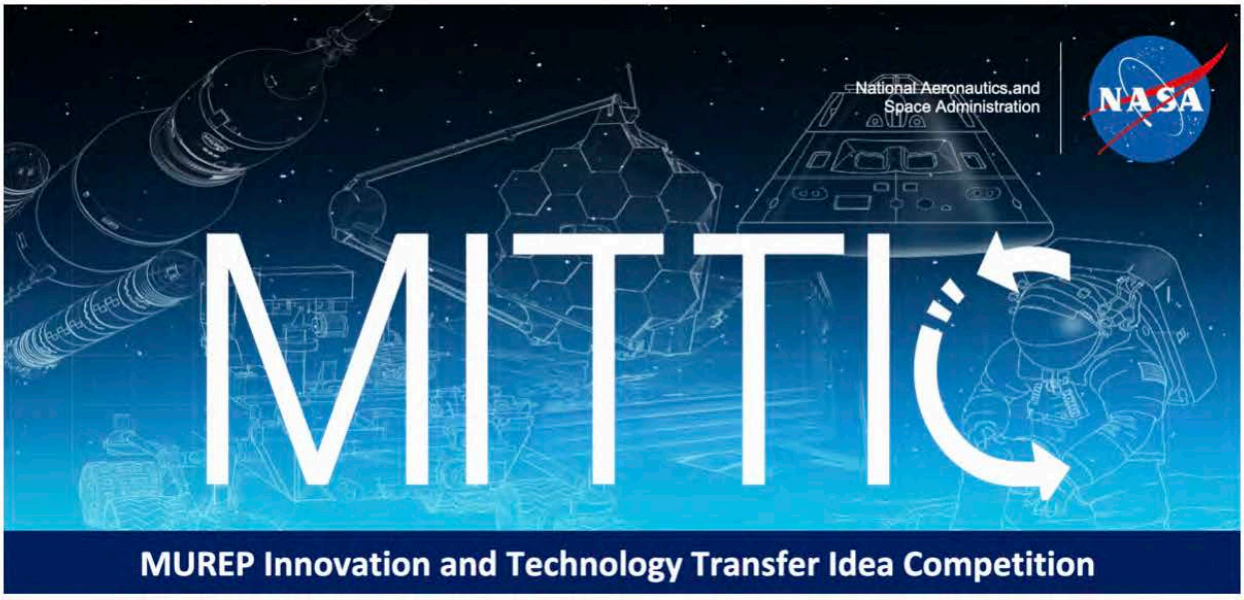
April 12: Cracking the Code

WiCS hosted an empowering event at the Entrepreneurship and Innovation Center (EIC) for an empowering afternoon of insightful discussions with amazing panelists and a delicious lunch. This event was another opportunity to connect, learn, and grow together. See you there! #WomenInTech #Empowerment #ForWomenByWomen #bsuwics



April 23-26: WiCS participates in NASA MITTIC, Houston, Texas

Six members from the Bowie State Computer Science department participated in NASA MITTIC. Five of these students were WiCS members, and the team lead was the President of the WiCS club. They pitched their idea, TinyTrack, a onesie that monitors babies' breathing at night. They were selected as a top ten finalist and got to present their concept in Houston, TX. From this opportunity, one WiCS member got an internship with NASA.



May 2: WiCS Game Night Co-Hosted with Bulldog Coders Club

May 3: Research Panel: Mentorship and Networking

May 8, 2024: Fireside Chat with Seniors and Alumni

Inspired by all the panels hosted by WiCS, a first-year WiCS member hosted a panel where Bowie alum and seniors could discuss how they came to work at large companies such as Apple, Adobe, and Amazon. Over 20 students attended this panel and learned about how to be successful by using the Bowie State pipeline and network.

May 9: Computer Science Awards and Gala Hosted by WiCS

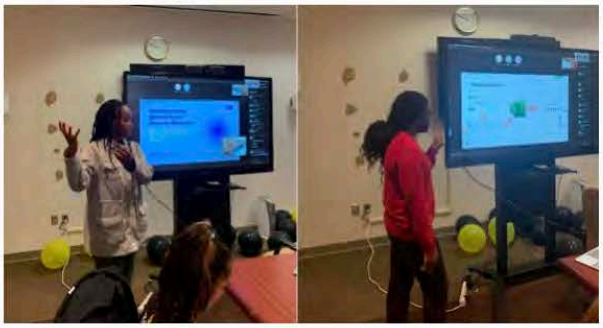
To send off seniors and end the year before students dispersed for internships, WiCS leadership hosted the first-ever Computer Science Awards and Gala. We celebrated internships and achievements from the academic year. Over 40 students attended this event.

May 10: Research Clusters Presentation

WiCS expresses its thanks to Northrop Grumman for its support.

Participants:

Ashanti Boone, Nicole Balay, Mikayla Lomax, Fahminanur Salma, Mojolaoluwa Owolabi & Maryann Sherman, Tolulope Oshuntaye, Lila McCall, Iteoluwakiishi Ogunbiyi, Gracemercy Gichaga, Ruth Agada, Melanie Nzaou, Jordan Mayo, Halima Audu, Praise Ben, Ruth Olusegun, Ifeoluwa Akinrelere, and Ayen Kuol.



Program Structure (Continuation From Fall 2023):

Week 1: Intro

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Week 2: Literature Review Discussion and Zotero Demo

Objective:

1. Discuss your experiences doing introductory lit reviews for your chosen topics and what your project's focus
2. Get tips from the mentors on effectively reading literature and keeping track using Zotero.
   What counts as research? And what counts as computer Science research
   Types of research/categories of research
   Narrowing down / focusing a research topic
   Literature review tips to avoid the rabbit hole

Week 3: 'Soft' Challenges in Research: Anxiety and Accountability

Objective: A confidential Discussion on challenges and nuances of anxiety and accountability in research

Week 4: Writing Strategies in Research:

Objective: As a group, explore the different strategies to approach writing a research paper
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Week 5: Independent Group Meeting

Week 6: Spring Break

Week 7: Independent Group Meetings

Week 8: Mindset

Objective: Understanding different mindsets, and how they impact research
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Week 9: Panel Discussion: Discovering Purpose in a Tech-Driven World

Week 10: Independent Group Meetings: Experiment Design Session

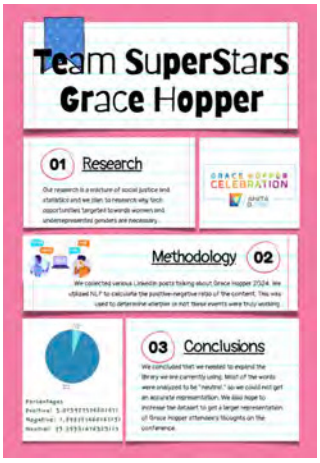
Sessions to design experiments for research topic

Week 11: Independent Group Meetings: Experiment Design Session

Week 12: Panel: Mentorship and Networking.

Week 13: Research Clusters Mixer and Presentations

Abstracts:



1. **Title:** Leveraging Natural Language Processing to Uncover Opportunities for Women in Technology: A Comprehensive Analysis of Tech Conferences

Researchers: Ashanti Boone, Nicole Balay, Mikayla
Mentor: Fahminanur Salma

This research explores the necessity of tech opportunities targeted toward women and underrepresented genders through a blend of social justice principles and statistical analysis. Our methodology involved collecting and analyzing data from LinkedIn posts related to the Grace Hopper Celebration (GHC). We employed natural language processing (NLP) techniques to process the gathered data and analyze the sentiment. The initial analysis focused on two LinkedIn posts due to time constraints. Each post was cleaned by combining words and removing emojis and stop words, followed by sentiment analysis using the TextBlob library to determine the positive/negative sentiment ratio. The preliminary findings indicated a positive sentiment of 5.01%, a negative sentiment of 1.39%, and a neutral sentiment of 93.59%. Future work aims to expand the dataset, incorporate data from additional platforms, and enhance sentiment analysis methodologies to provide a comprehensive understanding of the impact of targeted tech opportunities for women and underrepresented genders.

2. **Title:** Diversity in Tech: Investigating the Factors Behind the Disparities

Researchers: Mojolaoluwa Owolabi & Maryann Sherman
Mentor: Tolulope Oshuntaye

The field of technology is becoming increasingly lucrative and demanding. The field, in general, has created thousands of jobs and has paved the way for necessary technical advancements. The technological field is broad, encompassing careers such as engineers, information technology, and UI/UX development. Inequality and diversity among tech jobs remain stark issues. Minorities and women hold fewer tech jobs and make less than their White male counterparts. Previous research has shown how bias and prejudice has contributed to this issue. In the present work, we analyzed subsets of Census data to begin to form an understanding of minorities and women who venture into the technology field. We considered women and minorities within the US who held technological careers and their education levels, household income, state of residence, and more. We looked for "spikes" in our data – states where women and minorities held more technological jobs than the average. Our study hopes to gain more insight into why some women and minorities in some states hold more tech careers than others and what factors contribute to this, whether it be mentorship, extracurricular activities, STEM programs, and more.

Keywords: women, minorities, STEM, diversity, inclusion, technology, computer science, software engineer, information technology,
Presentation: https://drive.google.com/file/d/1Oc4H7I3y7WX1nkjJ8ltqlUwk2WaS5bpi/view?usp=sharing

3. **Title:** The Psychology Behind Cyber Security Behaviors

Researchers: Lila McCall, Iteoluwakiishi Ogunbiyi, Gracemercy Gichaga
Mentor: Ruth Agada

The rising prevalence of cyber threats underscores the necessity of understanding cybersecurity from both a technological perspective and through the lens of human psychology. This paper explores the psychological aspects of cybersecurity, focusing on how cognitive biases, decision-making processes, and individual traits influence the effectiveness of security measures.

We examine various psychological theories and their applications within cybersecurity practices, including the roles of risk perception, motivation, and conditioning in shaping security-related actions. Drawing on recent literature, we propose a multidisciplinary approach that integrates insights from cognitive psychology, behavioral economics, and criminology to develop a comprehensive framework for understanding and influencing user responses in cybersecurity settings.

Our analysis reveals that enhancing cybersecurity protocols requires a nuanced appreciation of the human factors that drive adherence and lapses in security practices. This study aims to pave the way for more effective interventions by tailoring cybersecurity strategies to align with inherent human tendencies and psychological needs.

This paper highlights the critical role of psychology in cybersecurity and calls for a paradigm shift towards more human-centric security approaches.

Supporting docs: https://docs.google.com/document/d/1_S2XxbEkcRUQGrOHXNSWq2i0b4ceeckx3ZoZHFFGTQg/edit?usp=sharing

https://docs.google.com/document/d/1xuBawd21EcWcNyCot-xYzZrW2e9hldfbCM12NRpxXPI/edit?usp=sharing

4. **Title:** Transforming Healthcare Through Software Engineering: Disclosing the Prospects for the Embracing of Innovation in the Scales of Individual Patients

Researchers: Melanie Nzaou, Jordan Mayo
Mentor: Halima Audu

This study investigates the versatile role of medical software applications incorporating diagnostic imaging and drug discovery, medication efficacy, EHR(Electronic Health Records) management, predictive analytics, natural language processing, virtual health assistance, genomics, personalized medicine, and remote patient monitoring. The study examines AI technologies in healthcare holistically using an evaluating lens. It illustrates how they can be used to transform healthcare provision while indicating the personal risks arising from such technologies' deployment. The prime issues that should be tackled head-on are data breaches, de-identification issues, and automated bias. Crucially, the research enhances processing capabilities, widening the scope of data protection options and introducing state-of-the-art encryption and anonymization techniques designed to guarantee health information security. Instead of just theoretical research on how these privacy-preserving mechanisms would perform in real-life healthcare situations, the experiment pinpoints their practicality through actual application in authentic healthcare environments. The goal is to lay out an in-depth action plan on the data guardrail for AI applications in healthcare settings. The plan aims to promote the responsible application of AI technology and the use of this pivotal technology. Our research would signal more efficient, patient-oriented healthcare, implying full utilization of IT advances.

Keywords: programmed engineering, medical diagnostics and assistance, AI technologies, data privacy, patient-centered treatment, encryption, anonymization, and medical software programs.

Research Clusters Head Mentor
Aken Koul Deng, BSU Computer Science Graduate Student

Key Observations, Challenges, and Lessons Learned

1. Observation: Consistent Meetings with All groups

Consistency wins: Having consistent 'all groups' meetings helps the students better engage with each other and have the different groups learn from each other while anchoring students to the research cluster objective amidst the busy semester schedule

2. Observation: Creating a safe space to share experiences: Soft Skills

We maintained open discussions throughout the weekly meetings, sharing the challenges we face in research as individuals and strategies to succeed. Balancing the education and mentorship of soft and hard research skills was a successful model.

3. Challenge: Schedule Structure and Milestone Accountability

We struggled with having each group accountable for deliverable milestones in the given time frame. Having a tighter schedule structure for milestones is advisable for future clusters. We suggest the following milestones be strictly adhered to: Topic Proposal, Literature Review, Experiment Validation, Experiment Design, and Final Presentation.

4. Challenge: Presenter Ready

We experienced a lot of rushing towards the end of the program.
Having Students formally present their milestones to the whole group throughout the semester will help them be audibly ready on their research topics and help them stay accountable to the various milestones throughout the program so as not to rush at the end, especially when students have so much on their plate.

5. Observation: A fast start:

Having a fast start to the program is vital to success. This spring, we had a fast start to the program. During the fall semester, we had a slower start; setting schedules for participants was more challenging. Having all the material and infrastructure prepared before the beginning of the semester will help set the pace for a fast start. This document can help set the format/curriculum for future research clusters.

6. Observation/Challenge: The winter gap

Students started the program in the fall and had difficulty getting back on track with their research after the winter break. We recommend strict adherence to the poster presentation checkpoint of their topic in the fall and more focus on the experiment validation and design in the spring.

7. Observation/ Challenge: Mentor Immersion

Mentors should assume the role of PI for the research. This approach will help them be more immersed in the research and gain the experience of a professor while also supporting students toward a higher level of research.

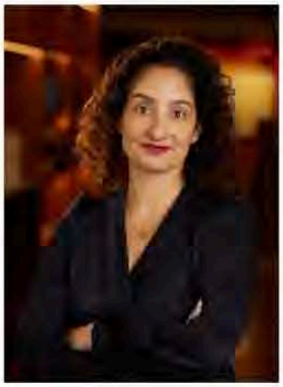
CLARE BOOTHE LUCE PROGRAM AWARDS FOUR SCHOLARSHIPS TO WOMEN IN COMPUTER SCIENCE

The Luce Foundation awarded Bowie State University a $299,996 grant to support women undergraduate students majoring in computer science through the foundation's Clare Boothe Luce Program for Women in STEM. The program is one of the single largest private sources of funding for women's STEM higher education and is dedicated to increasing the participation of women in the sciences, mathematics, and engineering at every level of higher education. The program aims to transform STEM ecosystems across the United States by addressing the structural and cultural barriers that inhibit women's pursuit of and persistence in STEM fields, expanding educational opportunities for women in STEM, and advancing their leadership in the sciences. The Clare Boothe Luce Program awards grants so institutions may uncover and address the barriers that prevent or discourage women on their campuses from STEM fields.

Bowie State's computer science program increased female enrollment by over 150% since 2019.

HENRY LUCE FOUNDATION JOINS BSU FOR EXPERIENTIAL LEARNING DAY

On September 26, 2024, BSU hosted members of the Henry Luce Foundation to engage with computer science students regarding their research. For more than 80 years, the foundation has brought people together across boundaries to develop new insights that will help solve urgent challenges facing humanity. The foundation holds particularly interest in expanding the educational opportunities for women in STEM and advancing America's leadership in the sciences. Director of Leadership Programs for the foundation, Dr. Aida Gureghian, shared the history of the Clare Booth Luce Program for Women in STEM, welcomed students into the community of learners, and emphasized that the world needs their perspectives and efforts.



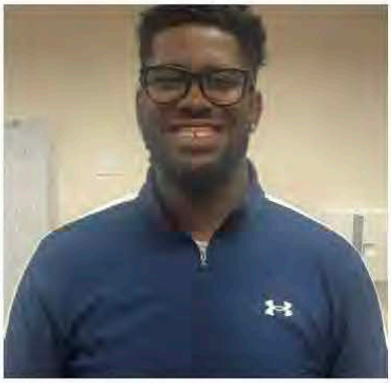
Student projects included those using artificial intelligence to sharpen unpiloted aerial drone awareness, data to study oyster reefs in the Chesapeake Bay, and image encryption with machine learning


INTRO
Conclusion


Join us at Open House
Join us at Open House


LLM-Based Autonomous Unmanned Aerial Vehicle (UAV) for Situational Awareness

STUDENT SUCCESS STORIES



Lloyd Bolodeoku's Success Story: During my four-year journey at Bowie State University in the Computer Science Department's Tech Pipeline, I have accumulated various experiences that have been opportunities of a lifetime.

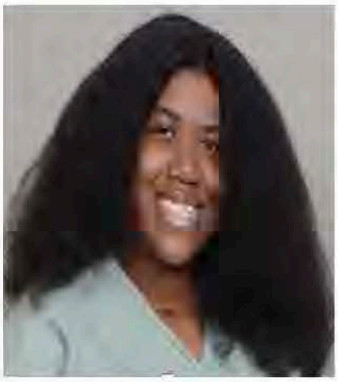
At Bowie, I led the Bowie State University Cyber Security Club and participated in multiple competitive cybersecurity competitions. I represented the National Security Agency (NSA) and the United States Cyber Command (USCYBERCOM) in the Cyber Battle of Estonia. I placed first in the Central Intelligence Agency Digital Innovation (CIA DI) cyber security competition. I have competed in Battle of the Brains, Morgan Hacks, and American Airlines 24-hour hackathons. I was part of the Cyber Warrior Program, which allowed me to obtain Security + for free.

I have interned with the Technology Advancement Center (TAC), formally Maryland Innovation & Security Institute (MISI), as a Junior Project Engineer, Junior Network Engineer, and SOC Analyst for the past three and a half years. I obtained a Top-Secret level clearance there and learned many amazing things, from project management to system engineering to exploit development.

As a Junior Project Engineer and Junior Network Engineer, I was tasked with building environments for the Hack the Universe Series: Hack the Port, Hack the Hospital, and Hack the Railroad, focusing on how our nation's critical infrastructure can be hacked and its impacts. There, I learned what Operational Technology (OT) and Industrial Control Systems (ICS) are, how crucial those devices are to various mission-critical sectors, and how they can be exploited. As a SOC analyst, I provided network and log analysis, vulnerability assessments, incident response, and offensive cyber operations to various DoD customers. I learned how to spot anomalies on a network and respond during and after an attack.

From the Winter of 2023 to the Summer of 2023, I interned with Adobe as a Security Engineer in Adobe's Incident Response Security Coordination Center (IR SCC). Working at MISI gave me the skills and mentorship to excel at Adobe and earn a full-time role with the company for $130,000. In the Fall of 2023, I got accepted into the U.S. Marine Corps Forces Cyberspace Command apprenticeship program and obtained an SCI and CI Polygraph on top of my Top Secret from MISI. So far, I have received multiple job offers from Adobe, Booz Allen Hamilton, Leidos, and Owl Cyber Defense and had interviews with Microsoft. All of which have offered me six figures coming out of college.

Desiree Chisholm is a sophomore at Bowie State University. During her junior year of high school, she completed the Cisco Networking Academy and became CompTIA IT Fundamentals certified through Howard County's Application & Research Laboratory (ARL). She continued at ARL during her senior year while interning in the National Security Agency's work-study program. Desiree has been furthering her skills this summer, interning at an office focusing on data analysis and back-end development. Watch for even more outstanding achievements by Desiree.



Looking Forward with Sage Despeignes: From a young age, I harbored a fascination for technology. I would often take things apart. Whether it was disassembling toys or old electronic devices, I eagerly explored their inner workings, finding new ways to put them back together. This innate curiosity fueled my desire to comprehend the intricacies of technology, fostering a passion for understanding how systems functioned and how they could be deconstructed and repaired. Naturally, this affinity guided my academic path toward technology and cybersecurity. This deep-seated interest propelled me to pursue higher education in Information Technology at Prince George's Community College (PGCC), marking the beginning of a transformative journey that would ultimately shape my future.

During my tenure at PGCC, the PGCC Women in CyberSecurity (WiCyS) student chapter provided invaluable guidance and a sense of belonging. Joining this club enhanced my academic journey and allowed me to share my enthusiasm and interest in cybersecurity with fellow students. One of my proudest achievements was working with a team of students from our WiCyS Student Chapter to develop an interactive escape room focused on cybersecurity awareness. This initiative, presented to students from elementary through high school across Prince George's County, underscored the significance of community engagement and the transformative power of education. It was a defining experience that instilled in me the value of giving back while reinforcing the profound impact of mentorship and sharing the knowledge we gain with others.

In my final year at PGCC, my career aspirations solidified, thanks to the unwavering support of mentors like Professor Adeleke, Professor Okorie, Professor Ring, and Professor Dr. Moore-Crawford, alongside Dr. Shumba, Chair of the Computer Science Department at Bowie State University. Their guidance empowered me to pursue opportunities such as applying for the Bulldog Cyber Scholarship (CyberCorps Scholarship for Service), which perfectly aligns with my goal of serving in government within the cybersecurity field.

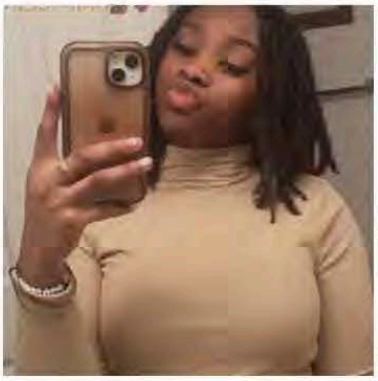
I vividly recall how Professor Adeleke, one of my dynamic professors from PGCC, played a pivotal role in connecting me with Dr. Shumba. Dr. Shumba, graciously addressing my concerns about the program, provided invaluable insights into the scholarship opportunity. With Dr. Shumba's guidance and support, I navigated the application process for the Bulldog Cyber Scholarship, also known as the CyberCorps SFS program. Despite initial doubts, I advanced through the selection process and received the CyberCorps SFS scholarship at Bowie State University, marking the beginning of an exciting new chapter in my journey.

Transitioning to Bowie State University from Prince George's Community College was met with apprehension, but those fears quickly dissipated as I found a welcoming community among fellow students, CyberCorps scholars, and faculty members. Joining the Women in Computer Science (WiCS) and the Cybersecurity Club has allowed me to collaborate on projects and expand my network. Notably, I collaborated with five peers to craft a proposal for the NASA MITTIC competition, which has advanced to the next round. I received an invitation to present our proposal at the NASA Johnson Space Center in Houston, Texas. Additionally, I recently attended the Women in CyberSecurity (WiCyS) 2024 conference, which offered invaluable opportunities to network with peers and glean insights from esteemed leaders in the cybersecurity domain. I eagerly anticipate participating in renowned conferences such as BlackHat USA 2024 and the Grace Hopper Celebration, further enriching my academic and professional journey.

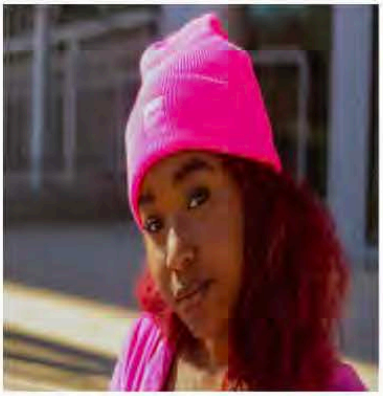
Despite occasional feelings of overwhelm, my commitment to becoming a security engineer in the government sector remains unwavering. My journey thus far has been characterized by resilience, perseverance, and the steadfast support of mentors, peers, and institutions like Prince George's Community College and Bowie State University. With each step forward, I am confident that the best is yet to come.

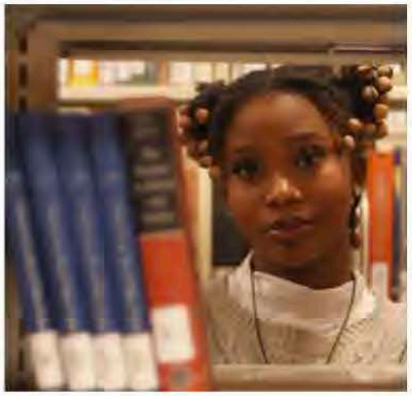
Calvin-Caleb Amiolemen's Story: I had the honor of serving as a tech panelist at CIAA 2024 on March 1. It was a significant milestone for me. During the event, I had the opportunity to share my journey through the tech industry with an audience comprising numerous black founders and individuals from different organizations. My talk focused on how I secured positions in the tech field, detailed my personal experiences, and explored the strategies I used to navigate the complexities of the tech world.

In addition to sharing my professional journey, I took the time to engage with young high school students who were also part of the panel. I offered them practical advice and tips on how to excel in college, aiming to equip them with the knowledge and skills they would need to succeed in their future educational endeavors.



Mia's BSU Experience: My time at Bowie State University has been nothing but extraordinary. I've learned so much in the technical field, developed so many friendships, and become a better woman, student, friend, and computer scientist. While at Bowie, I completed three internships with Refocus AI, Juxtopia, and AI Squared. I've completed multiple projects tackling problems from the NSA, researched various topics in Artificial Intelligence, and competed at numerous hackathons. I also became an executive board member for two computer science clubs at Bowie State (WiCS and Bulldog Coders Club). These clubs have provided different opportunities like the Grace Hopper and NSBE conference, building my coding skills in friendly competitions with my peers and building a solid bond with my fellow students on the same journey as me. Although my journey here at Bowie State is ending, I'd like to thank Dr. Shumba and the Computer Science Department for helping me become a better me, a better programmer, and a better person overall. The program has offered me many opportunities and knowledge that have helped me get multiple interviews with tech companies in the US, and I owe it to the Computer Science Department. Thank you! –Mia Travers





Marking Black History Month: On Friday, February 23, at 8:00 PM, **Max Campus Ambassadors Praise Ben** (*far left*) and **Melanie Nzaou** hosted a movie night centered around *The Color Purple*. It was a communal experience aimed at fostering connections and shedding light on the lives of black women in bygone eras. The atmosphere was vibrant, filled with laughter, profound discussions, and invaluable life lessons gleaned from the characters on screen. One such lesson resonated deeply with attendees: the journey of the protagonist, who, lacking in self-esteem, endured the cruelty of her abusive husband. However, witnessing another woman assert her worth sparked a revelation – that enduring such toxicity was no way to live.

As the credits rolled, students reflected on their interactions with others and how they allowed others to treat them. It was a poignant moment of introspection that underscored the importance of self-worth and empowerment. In the spirit of Black History Month, this movie night not only celebrated the resilience and strength of black women but also served as a reminder of the power of community and solidarity. Through events like these, Praise Ben and Melanie Nzaou are igniting conversations, challenging perspectives, and empowering individuals to embrace their voices and advocate for change.

Emmanuel Olayemi: My Experience at Bowie State University as an Applied and Computational Mathematics Major and Computer Science Minor

Can you believe it's been four incredible years already? Time does fly when you're having fun – and studying hard, of course! It feels like just yesterday I was a wide-eyed freshman, contemplating whether I should dive into Bioinformatics or stick with my love for mathematics and computer science. Spoiler alert: the latter won out, but not without a few twists and turns along the way!

Initially drawn to Bioinformatics because I was fascinated with the intersection of biology and computer science, I found myself at BSU needing more info on the major. So, I pivoted to applied and computational mathematics, fueled by my lifelong passion for the subject's challenges and endless possibilities. I even flirted with the idea of psychology as a minor, but it didn't click; asynchronous classes and I are not the best of friends!

But fear not, dear readers, for this tale turns toward the tech side. Enter Computer Science 112, my first online coding class – cue dramatic music. I'll be honest: online classes and I aren't exactly a match made in heaven, especially when they involve coding. Am I sitting down for 30 minutes to write lines of code? Not my idea of a good time. But give me a juicy math problem, and I'll happily spend hours dissecting it!

Then came Dr. Ruth Agada and Computer Science 113, and everything changed. Her teaching style sparked a newfound interest in coding, leading me to dip my toes deeper into computer science and cybersecurity. Soon, I found myself knee-deep in the Grade Enhancement Program, dreaming up ways to improve communication within the department and even landing a gig as the student advocate – talking about unexpected career paths! But wait, there's more! Fast forward to a whirlwind of internships, research projects, and collaborations with the Department of Homeland Security and George Mason University's Criminal Investigation and Network Analysis Center. From image classification to facial recognition to a project about A Light-Weighted Digital Image Forensic Analyzer to Detect AI-generated fake Images Through Raspberry Pi, my journey took me places I never imagined, including a stint as an Offensive Security Engineer at Adobe and a gig as a Data Analyst at the National Geospatial-Intelligence Agency. Oh, did I mention it? I'll obtain a top-secret clearance, so why not add extra excitement to the mix? My journey has been anything but dull! From diving headfirst into hackathons like the American Airlines extravaganza to rubbing elbows with fellow tech enthusiasts at conferences, I've had my fair share of adrenaline-pumping adventures. Oh, and let's not forget the glamorous world of research poster presentations – because who doesn't love explaining complex algorithms with a side of visual aids?

So, buckle up, folks, because this rollercoaster ride isn't slowing down anytime soon! Whether I'm coding up a storm or charming my way through a conference, one thing's for sure: the adventure continues, and I wouldn't have it any other way! None of this would have been possible without the unwavering support of mentors like Dr. Rosemary Shumba, Dr. Jie Yan, and Dr. Ruth Agada, who welcomed me into the Bowie State University family with open arms. So, here's to four years of growth, learning, and many cybersecurity adventures. Cheers to the next chapter!

Uzo's Letter to the BSU CS Department

Throughout high school, I've always been interested in things related to computer science. My biggest dream was to build games for a living because games were an integral part of my growth. Naturally, I sought more knowledge and education in computer science. My dream led me to major in computer science at Bowie State University. This extraordinary step forward led me into a wonderful and fulfilling journey of growth and experience.

In my first few classes, I had the honor of having the Department chair as an instructor, which inspired me to pursue more than just the basic level of programming. I challenged myself then to earn what I have now, and I am still challenging myself for opportunities and a better appreciation of my craft. This journey gave me opportunities that I never thought would be obtainable.

From Fall 2020, when I enrolled, to Spring 2024, I earned two internships from Battelle and an apprenticeship from Juxtopia that lasted almost two years. Thanks to the Department chair obtaining opportunities for students, I was able to apply for skills in a real-world setting and not only flourish but also gain new skills and a clear path.

In my junior year, I was offered the Bulldog Coders presidency. I took the offer, and it shaped many of the strong leadership skills I have today. In the club, we help develop other computer science majors' skills and provide resources. I made it a point to ensure they have the fundamental skills of someone in the industry while not making it feel like another class. I emphasize things like projects, git, and several coding challenges. We also point out the many tutors in our field who are happy to help, including myself. We also passed along opportunities to explore, such as how the department shares her opportunities. Lastly, we encourage students to join competitions and hackathons to learn more about the coding world outside of education. Overall, Bulldog Coders has been essential to my growth at Bowie State University, and I wouldn't trade it for anything.

I graduated in the Spring of 2024, and I can't wait to see how my experience here impacts something in the real world. My education, experience, network, and friends have built me to where I am. I'm proud to say that, thanks to all of it, I have scored a full-time position at Medtronic after graduation.

I will still pursue my dream in game development, but mainly as an indie developer because I prefer not to have my ideas stifled by corporate business decisions–Uzochi Anaele.

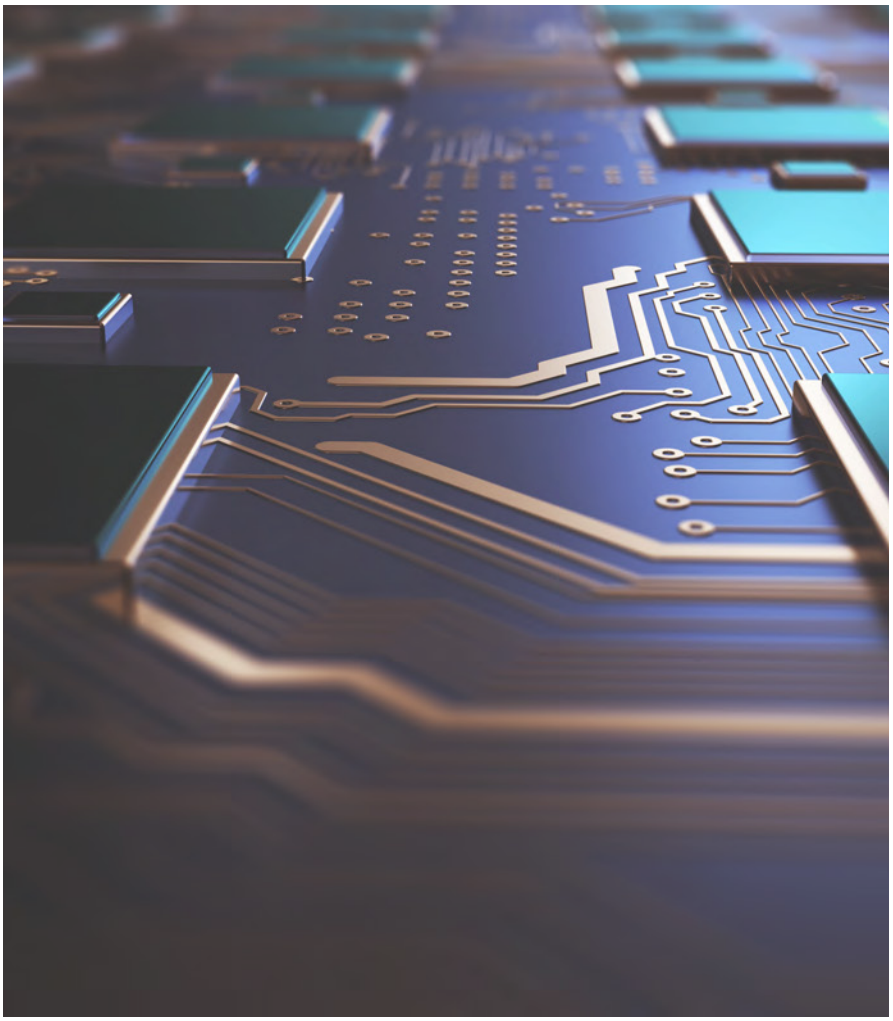
The Computer Science Department received $142,392 to develop a High-performance Computing Certificate

The Department of Computer Science received a $142,392 grant from the NSA on October 25, 2023. This grant, effective from September 22, 2023, to September 21, 2024, will facilitate a partnership with the Laboratory of Physical Sciences (LPS) Advanced Computing Systems (ACS) to create a High-Performance certification at Bowie State University. Winter stipends for faculty members are included to assist in developing this certification's teaching materials.

Department of Computer Science joins the MS Pathways to Computing Consortium

Department of Computer Science joins the MS Pathways to Computing Consortium
The Department of Computer Science joined the MS Pathways to Computing Consortium, led by Northeastern University's Khoury College of Computer Science. This Consortium aims to widen tech sector participation by creating bridge programs that enable students from diverse backgrounds to pursue graduate computing degrees. An awarded $66,000 grant will support BSU in developing a bridge program for students with a non-tech background to attain a Master's degree in Computer Science. BSU is among 30 other institutions in this Consortium.

The funding will allow faculty members to review the current graduate curriculum, identify courses for the bridge program, determine the suitability of a post-baccalaureate certificate, and develop course materials for online course content.



FACULTY CONFERENCE PRESENTATIONS AND PUBLICATIONS

CONFERENCE PRESENTATIONS

H. Kyeremateng-Boateng and D. Josyula, Choosing LS-Stat Confidence Scores for Neural Networks' Predictions, International Conference on E-Mobility, Power Control and Smart Systems ICEMPS, 2024.

Y. Houkpati, K. M'Bale, M. Conn, G. Goldman, T.-D. Tran-Luu, S. Ramamurthy and D. Josyula, Siamese Networks for Autonomous Classification of Battlefield Ground Vehicles Using Acoustic Data, 10th Annual Conf. on Computational Science & Computational Intelligence, CSCI 2023.

M. Abobor and D. Josyula, SOCIALBERT - A Transformer Based Model used for Detection of social Engineering Characteristics, 10th Annual Conf. on Computational Science & Computational Intelligence, CSCI 2023.

A. Herron and D. P. Josyula, An Active-Logic Based Agent's Reasoning for Avoiding Futile Action Repetition, The Twelfth International Conference on Intelligent Systems and Applications, INTELLI 2023, 27-33.

H. Kyeremateng-Boateng, D. Josyula, and M. Conn, Computing Confidence Score for Neural Network Predictions from Latent Features, 5th International Conference on Control, Communication and Computing, ICCC, May 2023

B. Allogmany and D. P. Josyula, An approach to dealing with concept drift in personalized learning systems, The Fourth IEEE International Conference on Cognitive Machine Intelligence-CogMI, 2022

E. Allogmani and D. Josyula, Mitigating the Effects of Class Noise Using Two-Level Filtering Learner Algorithm, The 29th International IEEE Conference on Systems, Signals, and Image Processing (IWSSIP), 2022.

B. Allogmany, D. Josyula and T. Alshalali, Handling Concept Drift using LSTM based Autoencoders, The 17th International Conference on Data Science, (ICDATA'21), 2021.

E. Allogmani and D. Josyula, Learning with Noisy Inconsistent Data, The 17th International Conference on Data Science,(ICDATA'21), 2021.

PUBLICATIONS FROM THE FACULTY AND STUDENT TEAMS

S. Y. Ji, S. Jayarathna, A. M. Perrotti, K. Kardiasmenos, and D.H. Jeong, Identifying Patterns for Neurological Disabilities by Integrating Discrete Wavelet Transform and Visualization. Applied Sciences, 2024, 14(1):273.

H. Kyerematen-Boateng and D. Josyula, Choosing LS-Stat Confidence Scores for Neural Networks' Predictions, International Conference on E-Mobility, Power Control and Smart Systems ICEMPS, 2024.

Y. Houkpati, K. M'Bale, M. Conn, G. Goldman, T.-D. Tran-Luu, S. Ramamurthy and D. Josyula, Siamese Networks for Autonomous Classification of Battlefield Ground Vehicles Using Acoustic Data, 10th Annual Conf. on Computational Science & Computational Intelligence, CSCI 2023.

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H. Kyerematen-Boateng, D. Josyula, and M. Conn, Computing Confidence Score for Neural Network Predictions from Latent Features, 5th International Conference on Control, Communication and Computing, ICCC, May 2023.

A. Herron and D. P. Josyula, An Analysis of the Deliberation and Task Performance of an Active Logic Based Agent (Student Abstract). Proceedings of the AAAI Conference on Artificial Intelligence, 37(13), 16228-16229, 2023. https://doi.org/10.1609/aaai.v37i13.26974.

H. Kyerematen-Boateng, D. Josyula, and M. Conn, Algorithm to Compute Trustworthiness of Neural Network Predictions, International Workshop on Social Impact of AI for Africa @ Thirty-Seventh AAAI conference on Artificial Intelligence, 2023.

D. P. Josyula, M. D. Goldberg, A. Herron, C. Maxey, P. Zaidins, T. Clausner, J. Brody and D. Perlis, Knowledge of Self and Other Within a Broader Commonsense Setting. In: Gurney, N., Sukthankar, G. (eds) Computational Theory of Mind for Human-Machine Teams. AAAI-FSS 2021. Lecture Notes in Computer Science, vol 13775. Springer, Cham. https://doi.org/10.1007/978-3-031-21671-8_2, pp. 21–29, 2022.

B. Zheng, S. Andrei, M. K. Sarker, and K. D. Gupta, eds. “Data Driven Approaches on Medical Imaging”. Springer Cham, 2023. DOI: https://doi.org/10.1007/978-3-031-47772-0.

P. Hitzler, M. K. Sarker, and A. Eberhart, Aaron, eds. “Compendium of Neurosymbolic Artificial Intelligence”. Vol. 369. IOS Press, 2023. ISBN: 978-1-64368-406-2.

V. Boateng, B. Yang. "A Global Modeling Pruning Ensemble Stacking with Deep Learning and Neural Network Meta-Learner for Passenger Train Delay Prediction", IEEE Access, vol. 11, pp. 62605-62615, 2023, doi: 10.1109/ACCESS.2023.3287975.

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Ahmad Johnson
Kamar Johnson
Robert Johnson
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Christian Jones
Devin Jones
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Emmanuel Olusoga
Oluwagbemisola Oluwagbire
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Ogechi Onyekwere
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Nelson Osuji
Iman Oumar Sanda
Christian Owens
Mojolaoluwa Owolabi
Adrian Owusu
Oluwatomi Oyategbe
Temitope Oyemade (G)

John Dominic Paja
Kristian Paschal
Tanviben Patel (G)
Kaia Patterson
Zeyana Paulemon
Gerell Perrington Jr
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