BULLDOG BYTE

Inaugural Issue

FROM THE CHAIR:

Greetings! I am the Chair of the Department of Computer Science. I joined Bowie State University on July 1, 2019, and became Chair that same year. I came in from the United States

Naval Academy, where I was a Cyber Science professor. I am an educator at heart with over 20 years of higher education teaching, research, and administrative experience. My research interests include secure software engineering, the Internet of Things (IoT) and security, digital forensics, software validation, verification, gender, and cybersecurity.

It is a pleasure for me to introduce the *Bulldog Byte*, our yearly departmental bulletin, starting this year. The goal for the *Bulldog Byte* is to share with our students, faculty, alumni, incoming students, and industry partners some departmental achievements during the academic year. These achievements include accreditation, the growth of student community groups, curriculum development, faculty and student research, grants and gift funding, partnerships, high-impact programs, inspiring stories from our alumni, and bios from the newly hired faculty.

The *Bulldog Byte* is web-based and will be available on our website towards the end of the summer/early fall. You may wonder how we came to name it the *Bulldog Byte*. We solicited possible names for the magazine from the computer science students. Tyler McBride, a senior in our department, submitted the winning, *Bulldog Byte*. You can read more in the magazine about how he chose the name. Congratulations, Tyler!

The 2021-2022 academic year was very productive. A big thanks to all our faculty, students, and administrators for their support. I am happy to welcome two new faculty members, Dr. Sreenivasan Ramasamy Ramamurthy and Dr. Vivek Shandilya. Dr. Ramamurthy joined us from the University of Maryland, Baltimore County (UMBC), where he completed his Ph.D. Dr. Shandilya was formerly an assistant professor at Jacksonville University. The bios for the new faculty are included in this bulletin.

I am excited to announce that we have hired Catherine Ojo as the Program Management Specialist. Her position was formerly held by Mrs. Mary Rodriguez, who retired at the end of September 2021. Thank you for your service, Mrs. Rodriguez!

Our goal next year is to focus on student recruitment, mentoring, and professional development to make our students the best ambassadors for the Department and Bowie State University.

Rose Shumba, Chair - Department of Computer Science
College of Arts & Sciences

Why *Bulldog Byte?*

Computer Science senior Tyler McBride says, "I chose *Bulldog Byte* because I wanted a name with alliteration and double meaning that connected the computer science department to our school mascot. After some brainstorming, *Bulldog Byte* was born! I presented the name to the computer science club, and everyone loved the double entendre in the word byte (relating to the *bite* of our mascot and the *bytes* of information we study and manipulate in the computer science department).

My hobbies are PC building, 3D printing, programming, and poetry. My experience as a poet and spoken word artist also helped me come up with the name *Bulldog Byte*. I noticed that other suggested names did not contain alliteration or double entendre, and I was confident that I could improve the magazine's name using those two strong poetic structures.

DEPARTMENTAL NEWS – DR. SHUMBA

CURRICULUM IMPROVEMENT

Accreditation:

It has been a great year! The Computer Science program was validated and re-designated by the National Centers of Academic Excellence. Please read the Cybersecurity News item by Dr. Jie Yan. We had our Accreditation Board for Engineering and Technology (ABET). A review re-accreditation visit took place in October of 2021, and ABET recently reaccredited us. Thank you to all faculty for your contributions and for making this a success.

New Academic Programs:

Three new BS programs and two upper-division certificates have been introduced.

Bachelor of Science (BS) in Data Science

The BS degree in Data Science prepares students for professional careers and graduate study through the mastery of mathematics, statistics, computer science, and core data science concepts such as Machine Learning, deep learning, and data mining. This course of study is guided by the 2021 Association for Computing Machinery (ACM) Computing Competencies for Undergraduate Data Science Curricula. The program also covers data privacy and ethics, teamwork, intellectual property, deep learning, and communication to help students succeed in this profession. The program culminates in a capstone experience in which a student embarks on an in-depth project applying learned, employable data skills. Graduates of this program are prepared to assume the roles of data scientists and data analysts.

Bachelor of Science (BS) in Cyber Operations Engineering

The BS degree in Cyber Operations Engineering is a unique interdisciplinary program at the intersection of cyber operations and engineering. The program prepares students to be cybersecurity leaders by mastering math, computer science, electrical engineering concepts, and non-technical cyber operations. The program emphasizes applicable technologies and techniques for all operational and system levels. Cyber operations engineering is a comprehensive program beyond what cybersecurity degrees mainly emphasize: software/data/information components. Its focus on systems, networks, devices, social engineering, legal topics, and ethical issues is unique among degree offerings at Maryland universities.

The Cyber Operations Engineering degree equips students with skills to address more complex cybersecurity risks and vulnerabilities in systems, including supervisory control and data acquisition (SCADA) systems, networks, and devices. Graduates are prepared to be technical leaders in cybersecurity with a thorough understanding of associated security concerns, social and legal impacts, and ethical consequences. Students acquire the skills and competencies critical to intelligence, military, and law enforcement organizations authorized to perform these specialized operations. Graduates of this program are poised to assume roles as cryptographers, vulnerability assessors, security architects, and cybersecurity engineers.

Bachelor of Science (BS) in Software Engineering

Software engineering involves applying a systematic, disciplined, and quantifiable approach to the development, operation, and maintenance of software—the application of engineering discipline to the development of large, complex software systems (Institute of Electrical and Electronics Engineers, 2010). The new program equips engineering professionals with a mastery of software development theory, practices, and processes. The BS in Software Engineering builds on the foundation of computer science in the same way other engineering disciplines are based on the application of physical or life sciences. However, software engineering emphasizes requirements, process, design, measurement, analysis, and verification. As a result, graduates of this program are provided a strong foundation in engineering principles and practice, which are then applied to developing software systems.

Upper-Division Certificate in Cybersecurity

The Department was approved to offer a 12-credit Upper-Division Certificate in Cybersecurity. The certificate provides a solid technical foundation balanced by non-technical content in cyber policy, law, ethics, and social engineering. The program's interdisciplinary nature aligns with the cybersecurity definition given by the Joint Task Force (JTF) on Cybersecurity Education: "a computing-based discipline involving technology, people, information, and processes to enable assured operations…It is an interdisciplinary course of study, including aspects of law, policy, human factors, ethics, and risk management in the context of adversaries" (JTF, 2022).

The Upper-Division Certificate is open to anyone who meets the prerequisites (programming and computer networks), including non-degree-seeking students and those outside the Department looking to reskill. Non-degree-seeking students with relevant working experience may seek approval from the Department of Computer Science to be admitted to the program.

Upper-Division Certificate in Cloud Computing Applications Solutions

The Department was approved for a 12-credit Upper-Division Certificate in Cloud Computing Applications Solutions. The certificate equips students with a strong understanding of cloud computing skills. Based on numerous case studies, labs, and online resources, students will utilize the latest state-of-the-art tools and methodologies to learn about cloud solutions. Upon completion, students will evaluate cloud computing trends, recognize best practices, and analyze and evaluate possible cloud solutions. The curriculum focuses on the fundamentals of building information technology infrastructure on a cloud platform. It also centers on cloud services management for building, deploying, and maintaining various cloud models and techniques. Students are trained in developing applications that ensure the cloud's availability, security, performance, and scalability. They are also trained in creating and using a big data analytical environment.

This certificate is open to BSU Computer Science majors, undergraduate majors at BSU interested in acquiring cloud computing skills, and any professionals outside of BSU who wish to reskill. Non-degree-seeking students with relevant working experience may seek approval from the Department to be admitted to the program.

Additional Opportunities

Both the Bachelor of Science (BS) and Master of Science (MS) in Computer Science will be offered as fully online programs. The two programs are in addition to the traditional BS and MS in Computer Science we have always offered.

The BS in Computer Science and all the Upper-Division certificates have been approved to be offered at the University System of Maryland in Southern Maryland.

Next year, we will offer an accelerated (4+1) MS in Computer Science.

Please contact Dr. Shumba (rshumba@bowiestate.edu) for more information on the programs.

Doctoral Program Updates

This year, the Department has approved several changes to the Doctoral program, as listed below.

I. Comprehensive Examination
    A. Content from courses in the three **Knowledge Areas**:
        1) Computer Systems and Software Engineering (645, 665, 685, 735, and 887)
        2) Database Systems and Artificial Intelligence (631, 673, 674, 750, and 831)
        3) Graphics, Image Processing, and Virtual Reality (618 with asterisks)
        will be included in the Comprehensive Exam.
    B. The exam will include a total of five questions. Students will be asked to solve:
        1) Three questions from their main research Knowledge Areas
        2) Two questions from one or two other supplementary Knowledge Areas
    C. Students are given two attempts to pass the Comprehensive Exam.
        Students must pass the exam within the first five years of enrollment in the program. Students who do not pass within that period will be automatically dismissed from the doctoral program.

II. Students will select their research topics and advisors immediately after passing the Qualifying Exam and updating their Programs of Study.

III. 500-level sequence courses will be eliminated from the Comprehensive Exam.

IV. Scientific Computing will be removed from the Knowledge Areas.

V. The number of dissertation credits for a semester will be capped at **six**. Students will be allowed to register for at most six dissertation credits per semester with the approval of the Department Chair and Program Coordinator. Students typically register for three dissertation credits per semester.

Please contact Dr. Hoda El-Sayed (helsayed@bowiestate.edu) for assistance with any further questions.

NEW FACULTY BIOS

DR. VIVEK SHANDILYA

Dr. Vivek Shandilya has previous experience as an assistant professor in the Department of Computer Science and as the director of the SOPSS Lab at Jacksonville University. He earned his bachelor's degree in Electronics and Communication Engineering from Bangalore University and his MS and Ph.D. in Computer Science from the University of Memphis. His 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 computational, biological, and socio-economic optimization security situations. His current projects are related to cybersecurity, recommendation systems, cloud security, and IoT in healthcare applications.

DR. SREENIVASAN RAMASAMY RAMAMURTHY

Dr. Sreenivasan "Sreeni" Ramasamy Ramamurthy is a Ph.D. candidate in the Department of Information Systems at the University of Maryland, Baltimore County. Sreeni has worked extensively with UMBC's Center for Real-time Distributed Sensing and Autonomy (CARDS). Before arriving in the U.S. for his Doctoral program, he received his master's degree in Biomedical Engineering from the Vellore Institute of Technology (VIT) and his bachelor's degree in Electronics and Instrumentation Engineering from Amrita School of Engineering in India. He was a visiting researcher at the University of Adelaide, Australia, and a junior research fellow at the Indian Institute of Technology in Bombay, India.

Sreeni's research spans the areas of wearable and ambient sensing, Machine Learning, statistical learning, resource (computing and networking) optimization, and IoT. He aims to develop cyber-physical systems that can sense (individually or collaboratively) to collect high-quality data and extract informative features using statistical and Machine Learning approaches. Sreeni is working to study the interrelation between the features and the application-specific domain knowledge to create a feedback mechanism to assist the domain experts with intelligent and cyber-physical systems.

RESEARCH AND EXTERNAL FUNDING

RESEARCH LABS

The Department of Computer Science has several research labs. Please see below.

Public Health Information Technology (IT) Education
Principal Investigator: Dr. Philip de Melo
The Bowie State University collaborative program on public health IT education has an objective to create a continuous, highly-trained, diverse, and inclusive health information technology (IT) workforce pipeline, thus responding to President Joe Biden's Executive Order, which calls for creating and sustaining a diverse public health workforce to better respond to future public health and biological threats like COVID-19.

Autonomous Technologies Laboratory

Director: Dr. Darsana Josyula, Professor, Department of Computer Science
This lab specializes in designing and developing algorithms and technologies geared towards improving the ability of both software systems and hardware components to perform autonomously in real-time environments. Integration of hardware and software components to create autonomous artifacts that can operate under different sizes, weights, and power and time constraints is also a significant focus.

Research in the lab falls under the broad fields of artificial intelligence, robotics, Machine Learning, and artificial cognition—including data mining, image processing, bioinformatics, natural language understanding, time-series analysis, knowledge representation, common sense reasoning, metacognition, and sensor data integration.

Computational Perception & Animation Laboratory

Director: Dr. Jie Yan, Professor, Department of Computer Science
This lab focuses on systems, software, and equipment used in graphics-related research like 2D and 3D rendering. Methods for detecting and analyzing facial expressions and affect gestures for system recognition will be explored, as well as realistic emotion and gesture synthesis for an anthropomorphic agent through computer graphics, computer animation and simulation, human-computer interaction, and video image processing.

Center for High-Performance Information Processing (CHIP)

Director and Principal Investigator: Dr. Hoda El-Sayed, Professor, Department of Computer Science
Co-principal Investigators: Dr. George Ude, Professor, Department of Natural Sciences, and Dr. Bo Yang, Professor, Department of Computer Science

The Center for High-Performance Information Processing (CHIP) was established at Bowie State University to facilitate and conduct research and enable educational programs in interdisciplinary High-Performance Computing (HPC). CHIP is directed by Dr. El-Sayed, a professor in the Department with expertise in Parallel Programming and Parallel Algorithms. The Center includes several prominent collaborating faculty whose expertise spans many other application domains in HPC.

HPC is highly vital as it has many applications central to national security and economic competitiveness, as demonstrated by the 2015 White House Executive Order, which is known as the National Strategic Computing Initiative (NSCI).

Professor El-Sayed's immediate research will focus on the productivity of the Partitioned Global Address Space (PGAS) programming and algorithms for application acceleration using Graphical Processing Units (GPUs) and Manycore Chips such as Intel®Phi™. The lab will also carry out research in parallel utilizing the Sphinx supercomputer.

Professor George Ude from the Department of Natural Sciences is also a CHIP member. He will focus on sequencing large databases of DNA through a DNA Barcoding Initiative to sample, identify, and classify species. Another CHIP member, Professor Bo Yang, will lead a research effort focused on computer forensics. In this work, he will investigate the fact that the explosion in data (big data)-generating applications, advances in cloud computing, supercomputing, and the availability of cheap memory and storage have all led to enormous amounts of data being sifted through in forensic analysis.

Cyber Security Application Laboratory

Director: Dr. Jie Yan, Professor, Department of Computer Science
Cybersecurity risk management and the latest equipment and tools used in cybersecurity trends and practices are investigated in this lab. Encryption/decryption technologies and software and operating system security are also explored.

FUNDED GRANTS

Dr. Soo-Yeon Ji	*Designing an Interactive Web-based Visualization System to Analyze Network Behaviors using Cloud Computing*, Principal Investigator 09/2018 – 09/2022 U.S. Army Research Office (ARO), Department of Defense
Dr. Darsana Josyula	*Robocall Blocker Gabriel Mobile App Version II* 11/29/2021 - 01/28/2023 NSF SBIR Phase II (Collaboration with Forward Edge AI) *Toward Knowledge of Cooperative Agency: A Foundation for Task- General Teaming* 11/29/2019 - 05/28/2021 DARPA (Collaboration with UMD)
Dr. Bo Yang	"'The Small Bodies of NASA' Planetary Data System with Minor Planet Center" $450,000 NASA grant
Dr. Sharad Sharma	NSF HDR Institute for Harnessing Data and Model Revolution in the Polar Regions Project $13M NSF grant
Dr. Hoda El-Sayed	High Performance Intelligent Data Science Institute and Department of Defense (DoD) $1M NSF grant $125,000 grant from Prince George's Community College to support pathways into the BSU Computer Science program
Dr. Jie Yan	*Detecting Vulnerabilities in Internet of Things with Deep Learning* 10/01/2021 – 09/30/2024 $750,000 NSF grant *NSF EAGER: SATC Education Visualization & Explainable Artificial Intelligence*, Co-principal Investigator 04/01/2021 – 03/31/2023 $299,000 grant *Simulator for Enhancing Undergraduates' Learning Experience in Cybersecurity Education* 06/1/2017 – 04/30/2022 $399,000 grant
Dr. Benjamin Harvey	NSA grant – through CRADA agreement to support the analysis and evaluation of a novel secure communications technology being developed at NSA $75,000
Dr. Philip de Melo	PHIT grant – Public Health Informatics and Technology Workforce Development Grant in collaboration with the Nursing Department $9.9M

Gift Funds

I.   Partnered with at least 20 organizations.

II.   Received $299,000 in gift funds to include scholarships and support of student activities.

III.   Notable partners:
   a.   Adobe
   b.   Battelle
   c.   Future End Technologies
   d.   Google
   e.   Miracle Systems
   f.   Net Impact Technologies
   g.   Northrop Grumman
   h.   Radiant Technology

CURRENT RESEARCH

EDGE COMPUTING CONCEPT RESEARCH

Advisor: Dr. Bo Yang

Researchers: Sophie Johnson-Shapoval and Ruth Abidemi Olusegun

Project Summary: The proposed research aims to find solutions to efficient and privacy-preserving data access and sharing in an edge-computing environment. A multi-level infrastructure is proposed to facilitate data delivery from a top-level data center to mid-level remote edge servers, then to the bottom-level computing devices close to the cloud edge. A content summary can be generated at each infrastructure level to indicate data content distribution and description of clusters of edge devices. Privacy-assuring models such as the Hilbert curve could also be integrated with this multi-level infrastructure for query resolution without disclosing sensitive information.
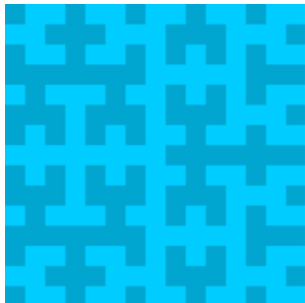
CLASS CREATION WITH SYNTHETIC DATA FOR EXTREMELY IMBALANCED DATASETS

Advisor: Dr. Darsana Josyula

Researcher: Francis Onodueze

Project Summary: Class imbalance problem is one of the most attentive (and challenging) problems for Machine Learning (ML) because while majority class samples are always available, minority class samples are rare and sometimes non-existent. This project presents a novel approach that directly addresses the challenge of class imbalance. It creates synthetic minority class samples when there are few or no minority samples in the train set. These synthetic minority samples can be created from either the majority samples (in the case of one-class learning) or minority samples (in the case of extremely imbalanced learning). Adding minority samples into the train set has been shown to boost performance significantly in many algorithms and outperform one-class learners.

GAN PROCESSING CONCEPT RESEARCH

Advisor: Dr. Manohar Mareboyana

Researcher: Mahfoudh M. Batarfi

Project Summary: The proposed research attempts to create a model that generates 3D realistic objects with high quality and high resolution from 2D images. It will try to combine some models that deal with generating shape, appearance, pose, depth, and edge in 3D form, as well as texturing objects using wavelet coefficients for high-frequency texture. The goal is to combine them into a new architecture that can effectively and efficiently map low-dimensional space to the space of 3D objects, using both supervised and unsupervised data.

RESEARCH SEMINARS
DETECTING DEEPFAKES 101

This workshop provided attendees with lightweight, hands-on experience with Deepfake detection tools, also known as Generative Adversarial Networks (GANs). In the hands of the wrong person, GANs can be used for fraud and/or malicious influence. For instance, recently, a Deepfake voice was used to scam the CEO of a UK firm for $244,000. GANs can also be used to generate images of people doing things that are entirely out of character.

Facilitator: Aaron J. Ferguson, Ph.D., Technical Director for the National Security Agency's Cryptographic Solutions Office

Dr. Ferguson is a Senior Executive Technical Director for the National Security Agency, where he drives the planning, analysis, development, and operation of high assurance cryptographic solutions, as well as the use of commercial solutions to protect classified information. He is responsible for the application of Data Science and Machine Learning to NSA cryptographic solution missions.

Currently, he is an adjunct professor at the University of Maryland Global Campus (UMGC). Dr. Ferguson has also served as the NSA Visiting Professor at the United States Military Academy at West Point. He conducted cybersecurity research and taught courses in information technology and software engineering there. Dr. Ferguson serves on cybersecurity education advisory boards at Howard University and the University of Delaware.

Dr. Ferguson has been invited to speak to audiences around the world. He has also published several articles on diversity, cybersecurity, and Machine Learning. He received his BS in Electrical Engineering from Howard University and his MS in Operations Research from the University of New Haven. He received an additional master's degree and Ph.D. in Applied Math and Statistics from the University of Delaware. Dr. Ferguson, a New York City native, loves playing, coaching, and watching basketball. He is an unapologetic fan of the NY Yankees, Giants, Mets, and the mercurial Knicks.

MACHINE LEARNING, GRAPHICS, VISION, HCI, AND AR/VR AT ADOBE RESEARCH

Adobe Research conducts academic and industrial research in many areas, including computer vision, graphics, Machine Learning, human-computer interaction, and virtual and augmented reality. This research is presented at top conferences and integrated into products used by millions of customers.

Facilitator: Dr. Brian Price

Dr. Brian Price is a Senior Research Scientist in Adobe Research. His research interests encompass computer vision, graphics, and Machine Learning, specifically focusing on selection and segmentation (interactive and automatic, image and video, binary and matting), document understanding, and image synthesis. He has developed technologies that have gone into many Adobe products, including Object-Aware Matting, the Object Selection tool, and the Select and Mask tools in Photoshop. He also helped to develop the Smart Selection and Auto Select tools in Photoshop Mix, and the Refine Edge and Cleaner features in After Effects. Recently, he has worked with the Adobe Acrobat team on document-related technologies. He received his Ph.D. degree in computer science from Brigham Young University (BYU) in 2010. His advisor at BYU was Dr. Bryan Morse.

CLOUD (AWS/AZURE) AND APACHE SPARK™ WORKSHOP

Content includes:

- · Just Enough Python/Scala for Apache Spark™
- · Apache Spark™ Overview and Programming
- · Apache Spark™ Tuning and Best Practices
- · Delta Lake
- · Apache Spark™ for Machine Learning and Data Science

Facilitator: Dr. Benjamin Harvey

Dr. Benjamin Harvey currently serves as the Director of Data Science for Maxar Technologies, a Federal Space and Defense contractor, where he leads all data science pursuits for the company. Dr. Harvey also serves as a Senior Research Associate at Johns Hopkins University within the Bloomberg School of Public Health in the Biostatistics Department. He is a part-time faculty member at George Washington University (GWU) within the Department of Engineering Management and Systems Engineering and the Department of Computer Science's joint Data Analytics graduate program. He teaches Data Science and Big Data Analytics courses.

Before joining Maxar, he was a lead Data Scientist and Solutions Architect with Databricks. Dr. Harvey joined the Silicon Valley startup Maxar Technologies in January 2019. Its founders are the creators of Apache Spark™. Dr. Harvey leads efforts to architect solutions and develop models for their Public Sector and Health and Life Sciences divisions.

INTRODUCTION TO RESEARCH METHODS IN COMPUTER SCIENCE

This workshop will provide an overview of the fundamentals of research methods applicable to the broad field of computer science, with particular emphasis on cybersecurity.

Facilitator: Dr. Josiah Dykstra

Dr. Josiah Dykstra is a Technical Fellow and member of the Senior Executive Service in the Cybersecurity Collaboration Center at the National Security Agency (NSA). He holds a Ph.D. in computer science and previously served as an NSA cyber operator and researcher. Dykstra is interested in cybersecurity science, especially where humans intersect with technology. In 2017, Dykstra received the Presidential Early Career Award for Scientists and Engineers (PECASE) from then-President Barack Obama. He 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 one book, *Essential Cybersecurity Science.*

SEMINARS HELD IN SPRING 2022

Preparing to Be an Effective Computer Science Researcher

This workshop examined foundational research methods applicable to the broad field of computer science, with a specific focus on cybersecurity. Topics included the language of research, research design, quantitative and qualitative forms of analysis, ethical issues in research, and appropriate documentation of research processes and outcomes. Participants were given tools to become critical evaluators of research, with particular attention paid to the analytical reading of research literature in computer science and applying skills needed to conduct primary research.
Facilitator: Dr. Josiah Dykstra

Bias by Us – How Cognitive Psychology Can Make You Better Data Scientists

Data scientists are trained to be the experts in scrutinizing all aspects of data, sources, and results. However, it is still rare to see data scientists putting that same level of scrutiny on themselves and the choices/decisions they make.

Facilitator: Dr. Sean Guillory, Ph.D., Cognitive Neuroscience

Sean Guillory earned his Ph.D. in Cognitive Neuroscience from Dartmouth College, where he primarily worked with neurosurgery patients to help improve the mapping for brain functions that were integral to their lives. After coming across Richards Heuer's *Psychology of Intelligence Analysis,* Dr. Guillory made it his career mission to find ways to utilize psychology and neuroscience insights to help improve Defense and National Security capabilities. At Booz Allen Hamilton, he works with the firm's various cognitive domain efforts, utilizing automation, biometrics, and social science methodology to help solve customers' concerns.

Possibilities Beyond Graduate School

This interactive workshop introduced the best practices for preparing graduate students for life after graduate school, strategies for establishing oneself as a thought leader and expert, practical portfolio building, relationship economics, innovative career use cases, and contextualizing global, real-world applications and problems with an emphasis on emerging technologies.

Facilitator: Dr. Loretta H. Cheeks, Ph.D., CEO, Strong TIES & DS INNOVATION-AI

Dr. Loretta H. Cheeks is an Artificial Intelligence (AI) expert, research scholar, consultant, and the President and CEO of Strong TIES & DS INNOVATION-AI. During her tenure, she has helped organizations gain dynamic data insights serving enterprises, governments, and non-profits. Dr. Cheeks is on a mission to create a better world with technology.

Before earning a Ph.D. in Computer Science at Arizona State University, this STEAM advocate was developing, deploying, and leading various teams within the communications, avionics, instrumentation, control, and chemical industries for Fortune 500 corporations. She was the first to identify a computational approach for the discovery of news frames in unstructured text (e.g., online news articles) and a computational methodology to explore news use of frames for shifting attitudes, beliefs, and values over time. She has demonstrated a unique ability to integrate communication theory and computer science methods to inform the fields of Machine Learning, psychology, and mass communication.

She is the President of DS INNOVATION-AI, an independent research and consulting Artificial Intelligence and Machine Learning organization. But she isn't just paving the way for up-and-coming engineers. Dr. Cheeks is committed to improving higher education for underserved and underrepresented communities to follow in her scientific footsteps. To do so, Dr. Cheeks created a non-profit called "Strong TIES."

Dr. Cheeks is listed among 10 Incredible Black Women in STEM. She is a founding member of National Science and Technology Medals Foundation Expert Connect, she was a featured guest on the Karen Hunter Show, and Verizon featured her on the International Day of Women and Girls in Science. She was recognized as a Change Maker at the White House and by NASA Datanauts. Dr. Cheeks regularly appears among thought leaders at conferences, in peer-reviewed publications, workshops, podcasts, and speaking engagements worldwide. She holds a BS and MS in Computer Science, a master's degree in Technology Management, and her Ph.D. in Computer Science.

SEMINARS HELD IN FALL 2021

Mathematics for Computer Science: Artificial Intelligence

Artificial Intelligence (AI) and Machine Learning (ML) are hot topics of today and will be essential for solving almost every problem in the future. Therefore, the U.S. Congress has characterized AI/ML as a top priority in education and research.

Facilitator: Dr. Philip de Melo

Dr. Philip de Melo was previously a faculty member at Columbia University and Georgia Tech, as well as a UNESCO professor. He has worked for a number of years in U.S. government research labs. His research interests include advanced methods in applied mathematics, optimization theory, signal data processing, artificial intelligence, Machine Learning, big data, business intelligence, automated decision management, and data warehousing. He is developing intelligent agents with decision-making capabilities to process realistic data for various applications.

STUDENT SUCCESS

SEMESTER	ENROLLED	COMPLETED	IMPROVED
SPRING 2021	66	42	31
FALL 2021	47	30	22

Several students in the Department are involved in high-impact practices to increase success.

Peer Mentoring/Grade Enhancement Program (GEP)

The Department of Education funds the Grade Enhancement Program to improve student performance in our gate-keeping courses: COSC 112, 113, 214 (for undergraduate students), COSC 503, 504 (for graduate students), and MATH courses.

Participants are assigned a peer mentor and a grade enhancer (see below). Undergraduate students who register for the program will receive a stipend of at least $1,000 for participating in the program, improving their grades, and participating in requested activities. A web-based book with auto-grading and debugging features will be provided as part of the program. The specific goals of the program are as follows:

I. Improve student performance in the computer and MATH courses taken by STEM majors at BSU. Populations served by the program include
    a. Computer Science students in the gate-keeping courses that include COSC 112, COSC 113, COSC 214, COSC 503, and COSC 504.
    b. Other BSU students taking COSC 112 and COSC 113 to fulfill the General Education Technology requirement.
    c. Bio-Informatics majors also take COSC 112, 113, and 214.

II. Build a community of learners.

III. Encourage students to concentrate on their studies and help ease financial woes by providing a stipend upon program completion.

IMPACT
(see table on previous page)

1. 73.8% of students who completed GEP in Spring 2021 maintained or improved their grades.
2. 73.3% of students who completed GEP in Fall 2021 maintained or improved their grades.
3. The program has helped students improve their grades. For the Computer Science majors, gate-keeping courses are critical for success in the rest of their courses and career preparation. Internships and career interviews are based on content from these courses. A student who performs well in the gate-keeping courses will likely continue to perform well in other courses.

We are recruiting peer mentors, mentees, and grade enhancers. These are paid opportunities. For more information, please email Dr. Rose Shumba at rshumba@bowiestate.edu.

DSEC HBCU/MI PROGRAM

The Defense STEM Education Consortium (DSEC HBCU/MI) is a collaborative partnership that aims to broaden STEM literacy and develop a diverse workforce of scientists and engineers. The Department of Computer Science at Bowie State University was awarded the DSEC HBCU/MI grant to improve students' access to STEM careers. Dr. Hoda El-Sayed is the Principal Investigator and Project Manager, and Dr. Loubna Dali is the Project Coordinator on the DSEC grant. DSEC includes elements focused on STEM enrichment programs for students and educators. A student learning community called *STEMist* was developed using the communication platform "DISCORD." It was established to build the partnership community of Prince George County Public Schools (PGCPS), Prince George's Community College (PGCC), and BSU. Community members work together to promote student advancement in STEM career pathways. This provides students with tutors, workshops, boot camps, opportunity announcements, and summer camps. Students attend conferences, seminars, and STEM Expo. Through the community, students learn more and get more interested as they receive all the support they need for success. The program strives to recruit more students in STEM, and Computer Science in particular, from PGCPS and PGCC to increase the retention rate in the Department. A summer camp, CompuGirls, in collaboration with Arizona State University, takes place at BSU for one week for middle and high school students (grades 8 – 12). The camp supports students and encourages them to become future cybersecurity and IT leaders. CompuGirls provides fun STEM summer activities

where participants learn the latest technologies in digital media, game development, and virtual worlds.

Please email Dr. El-Sayed (helsayed@bowiestate.edu) or Dr. Dali (ldali@bowiestate.edu) for more information.

COOPERATIVE EDUCATION

Several students are participating in co-op programs meant to complement their education through hands-on application in their fields of study. The co-ops are conducted throughout the semester.

I.   The number of students working for Cvent and Maryland Innovation and Security Institute (MISI) has increased from one in Spring 2020 to eight in Spring 2022.

II. Students have obtained in-depth work experience relevant to their careers. They have taken on increased tasks and responsibilities as they have progressed through their classes.

III. Students have remained with the same employers for the duration of their co-op positions, thus creating a community of learners.

CAPSTONE COURSES AND PROJECT

Senior capstone projects are included in the graduation criteria for Computer Science undergraduate students at Bowie State University. The BSU Senior Capstone course is a semester course in which students form teams of approximately five students and solve a problem like what they would encounter in industry. Since the Spring of 2020, the Department has been partnering with different organizations to offer a capstone experience for the students. These organizations include AWS, Booz Allen Hamilton, and Infor. Software development professionals from the organizations interact with the class each week. This program model benefits students in several ways:

I.   Students deliver products they are proud of.
II.   Students learn and acquire skills that can be added to their resumes.
III.   Students enjoy working on real projects designed by real software development professionals. This provides for valuable client interaction and networking.
IV.   Students may communicate via Slack channels to ask tech questions and take advantage of professional recruitment opportunities.

BSU students can share novel ideas and development methodologies for solving real-world problems. They can also learn how to create and participate in a candidate hiring pipeline. In fact, following the presentation of their final capstone project, two BSU students were offered jobs on the spot!

We are always looking for capstone and co-op projects. For more information, please reach out to Dr. Shumba (rshumba@bowiestate.edu).

PROJECT-BASED LEARNING

In December of 2021, Verizon awarded the Entrepreneurship Academy at BSU funding to introduce mobile application development to provide students with hands-on knowledge in designing and building an application to address social issues from the ground up. The grant allowed BSU computer science students to engage in an experiential learning program aligned with the theory and content learned in the classroom to solve real-world problems. 66 BSU students received training

- Using no-code app development platforms.
- The impact of mobile applications on solving real-world problems.
- The benefit of working in teams, along with strategies for working efficiently as a team.
- Various collaboration tools to streamline the application development process.
- Various revenue models that are available to monetize applications and distribution platforms, in addition to tips for pitching ideas to potential investors.

IMPACT
- Students' increased awareness of societal problems and how technology can help solve them.
- The opportunity for students to engage with and gain insight from industry professionals.
- Students gained new technology skills.
- Students enhanced their presentation and research skills.
- Students developed an entrepreneurial mindset—before the training, most students

SUMMER 2022 INTERNSHIPS

The Bulldog Summer Internship Program for Summer 2022

During the Spring of 2022, we solicited organizations in Maryland to give our students opportunities to intern with them. The Department of Education funds the Bulldog Summer Internship. We have been able to place 29 students with 14 organizations. Each organization provides a mentor to work with students for ten weeks over the summer. Students in the program attend one to two hours of professional development our partners offer. The partners scheduled to facilitate the professional development workshop include Tata Consultancy Services, Booz Allen Hamilton, and Northrop Grumman. Students are expected to present their internship experiences on August 5, 2022. Many thanks to the Department of Education for this opportunity.

Other Summer Internships

This summer, 50 of our rising sophomores, juniors, and seniors are participating in several internships in addition to the Bulldog Summer Internship Program. A special thanks to our partners at Tata Consultancy Services, Cvent, People-Tech, and Battelle for making this a reality for our students. A total of 25 interns were placed with these partners. Many students utilized BSU Handshake and their networking connections to apply for and participate in these internships.

SUMMER 2022 INTERNSHIPS

Student Name	Company
Airrund Woolen	Cvent
Aron Bishop	Federal Agency
Ashanti Boone	Northrop Grumman
Ayen Kuol	AI Developer, Software Engineer
Ayomikun Akinyemi	Battelle
Azunda Chukwuebuka	Trust Fund Registry
Brianna Young	Battelle
Brittany Ajayi	Trust Fund Registry
Busolami Adara	Cvent
Cecil Hunter	T. Rowe Price
Cherrie Espineda	Cvent
Chidinma Ugorji	Apollo Information Systems
Chikezie Franklin Igwebuike	People Tech Group, Inc.
Chukwuebuka Azundah	National Security Agency or NASA
Dalen Henderson	Graham Technologies Department of Defense – Marine
D'Alexis Baxter	Trust Fund Registry
Darlington Udeagbalao	The Minuet Group
Darwin Gomez	Apollo Information Systems
Dejai Brown	Corpse for Cyber
Devine O. Chinemere	Invisible Strengths
Eddy Koundjou	Deloitte
Edrina Namirembe	Trust Fund Registry
Ekene Onoh	TCS
Emmanuel Olayemi	Department of Homeland Security and Tata Consultancy Services (IT)

Student Name	Company
Gabrielle Stewart	Invisible Strengths
Ikechi Akwara	ReFocus AI
Isatou Jawara	Upfront Capital
Iyanna Jones	TCS
Jacqueline Ware	TCecure, LLC
Jayda Hughes	Battelle
JerMia Travers	ReFocus AI
Jessica Benitez	ACCEL Corporation, Inc.
Joevaughn Findlay	People Tech Group, Inc.
John Elesho	The Minuet Group
Joseph Keller	Trust Fund Registry
Joshua Marshall	Marsh McLennan
Kamal Epps	Trust Fund Registry
Kameron Robinson	Carson Solutions, LLC
Kavari Leonard	Invisible Strengths
Kenya Henry	ACCEL Corporation, Inc.
Larissa Turner	Cvent
Lloyd Bolodeoku	MISI
Marissa Curry	Cvent
Michael Stewart	Oracle
Natasha Wynter	Unique Computing, LLC
Nelson Okpah	Invisible Strengths
Nnenna Udeh	Unique Computing, LLC
Olivia Watts	Carson Solutions, LLC
Oluwabusolami Adara	Cvent
Oluwagbemisola Oluwagbire	Tata Consultancy Services
Roxan Rockefeller	Tata Consultancy Services
Sanis Mahato	Graham Technologies, LLC
Tyler McBride	People Tech Group, Inc.
Tyree Scott	FDA
Udoka Ndolo	TCecure, LLC
Uzochi Anaele	Battelle

PROFESSIONAL DEVELOPMENT WORKSHOPS

Our goal in the Department of Computer Science is to equip graduate and undergraduate students with the skills they need for a successful career in research, industry, or academia. The Department organizes and hosts research seminars and professional development workshops each semester. These workshops have allowed students to learn about different educational and career paths, explore industries, and strengthen their professional communication skills.

Goal Setting for Success at All Levels
Facilitator: Nathan Pierce, Diversity Program Officer, TCS, and Joe Leos, Jr., Campus Recruiter, Pacific Regions and HBCUs, TCS
Key Topics and Concepts:
- Seizing the moment and capitalizing on the opportunities
- Identifying the goal (goals vs. acquisitions): GPS Your Future
- Start where you are
- Identify where you are going: This can be passing finals, gaining an internship, or getting that dream job—the formula and the tools are the same: $A + B = C$. Always!
- Map-making 101

Networking Workshop
Facilitator: Amit Srivastava

Goal Setting Workshop
Facilitator: Dorothy Haynes

From Interview to Offer: How to navigate these steps to start your career
Facilitator: TCS Team
Join our All-Star TCS panel as we virtually present ways to help you navigate the hiring process from interview to offer. Nathan Pierce (TCS Diversity Program Officer and HBCU graduate) will host our event. Mohamed Hassan (TCS Technical Architect and HBCU graduate) will also speak about preparing for a technical interview and give tips for whiteboard interviews. TCS Campus Recruiter, Joe Leos, will discuss best practices for both in-person and virtual interviews. Finally, TCS Campus Recruiter Jordan Hunt will help you break down your offer letter and examine what is in the offer letter, when you should negotiate your salary, what total compensation is, and more.

Jagged Line to Success
Facilitator: David L. White
This talk chronicles the speaker's non-traditional path to becoming a CIO. It will also provide insight into navigating the corporate world and being persistent during the journey.

Technical Resume Writing
Facilitator: Dr. Arlene Maclin, President and CEO, MacSmith STEM Enterprises
Overview: What should your resume look like? Dr. Maclin will share a winning format for resumes that many students have used successfully. Participants should bring their draft resumes because she will give them time to work on their resumes during the workshop.

Finding an Internship Workshop
Facilitator: BSU Career Services
Overview: Students will learn how to conduct an internship search and get information about timelines for various companies and industries. Students will be provided detailed information about the best ways to utilize campus recruitment services. Alumni have also been invited to share their experiences with current students.

Technical Resume Writing – DOs and DON'Ts!
Facilitator: Kevin Gordon, Talent Acquisition, Northrop Grumman
Overview: In case you cannot attend Dr. Maclin's workshop, Northrop Grumman will also provide its perspective on effective resumes and offer helpful tips before its upcoming HBCU Interview Invitational on October 6-7, 2022.

Internship Day
Facilitator: Department of Computer Science
Overview: The Department is organizing an Internship Day to be held on October 15, 2022, between noon and 2 p.m. Please register if you can attend – you will receive $50 for attending and presenting on this day. Learn about internship searching techniques for sophomores, juniors, and seniors. Companies that employ our students will share information about their experiences and recommendations for success.

Technical Interviewing Prep & Tips and Mock Interviews
Facilitator: Adobe (Deanna Washington) and BSU Career Services
Overview: Students will receive tips on preparing for a technical interview, helpful resources, how to be successful during phone and video interviews, and how to make a good impression. In addition, students will see a few identified students participate in mock interviews led by a participating organization.

The Professional Development Workshops are a great opportunity to partner and collaborate with the Department. If this is of interest, please email Dr. Shumba (rshumba@bowiestate.edu).

INSPIRING STORIES FROM OUR ALUMNI

Kimberly Newby (graduated Spring 2021)

My name is Kimberly Newby. I am 25 years old and a working mom of two children. When it came to going to school, parenting, and working, I balanced these by utilizing time management techniques. From 8 a.m. to 6 p.m., I was a student and employee during the week. On the weekend and after 6 p.m,. I was a mom. My tip for parents who want to go to school and work is to definitely use an agenda to keep track of everything by writing it down. I had two ways to keep track: I wrote it down and put it in my phone. Also, ask professors if you can record them in class. My biggest tip is never be afraid to ask for help. It is not a sign of weakness or vulnerability, and your kids will thank you later.

Gloria Ballard (graduated Fall 2021)

My name is Gloria Ballard. I am 33 years old. I am a recent graduate of Bowie State University. I obtained a position as a Software Engineer specializing in mobile development, in May of 2021. I started this journey at the age of 28, while most of my peers were in their late teens or early twenties. Just six months ago, I was just like you —a college student hoping that someone would just give me a chance to show my potential. That's really the story of my life. If I have a thought/ dream/vision, I do not care if anyone else can see it, because I can. I started off with absolutely nothing in life. I've worked dead-end jobs since I was 15 years old. I had my first child at 18. I got married at 25, and it took me ten years to get up the courage to go back to college after graduating high school. I wanted to see my dream of being a college grad come to fruition. By the time I enrolled in college, I was a full-time wife and mother of two, with another on the way. During my first semester here, I did my finals in full-blown labor. I tell you that to say that if you want something, and I mean really want something, don't let anything get in your way. Keep in your head the reason you started and get to the end. I guarantee you it is worth every step, every tear, and every late night. It is not about where you start but your end goal and the journey that gets you there. Keep going. If a mom of three can do it, so can you!

Gloria Ballard

Software Developer, Front End, Mobile Development

STUDENT COMMUNITIES

WOMEN WHO CODE

The primary goal of Women in Computer Science at Bowie State University is to support and promote women in computer science by motivating them to strengthen their tech skills and provide guidance and assistance to women in this field to succeed and accomplish their goals.

The platform provides a social, technical, and networking community, where members highlight valuable contributions of women in Tech, showcase their contributions to the field, provide valuable insights to the Department of Computer Science on improving the learning outcomes for women, and help attract generations of female students by designing events which empower women to be future leaders in Tech.

A primary goal of our club is to increase women's participation in the computer science field. We also aim to improve diversity and inclusion for underrepresented minorities within the tech industry.

WOMEN'S RESEARCH IN COMPUTER SCIENCE GROUP

Women's Research in Computer Science Group is a platform dedicated to female students in computer science who wish to participate and gain skills in research. This platform also provides opportunities for students to engage in activities and events that will help them gain confidence and be successful in their fields of interest. The main objective of Women in Research is to create a resourceful environment for students to conduct research and become involved in research projects that solve real-world problems, as well as encourage students to publish their research findings.

The Women in Research team recently participated in the Mobile Application Development Competition and implemented successful and resourceful mobile applications. More exciting research projects will be coming up in the Fall semester. Stay tuned!

For more information about student communities within the Department, please contact Ayen Kuol, graduate student, at kuola0630@students.bowiestate.edu, or Dinali Jayawardana, graduate student, at jayawardanad0102@students.bowiestate.edu.

CYBER SECURITY CLUB

The BSU Cyber Sec club is a community of the Bulldog Coders Club guided by the mentorship of Dr. Jie Yan, Dr. Ruth Agada, Mr. Ogundiran, and Ms. Halima Audu. The goal for members of the BSU Cyber Sec club is to provide a community for like-minded students within STEM to share ideas and advice, build connections, and learn from each other. Lloyd Bolodeoku serves as the Chair of the BSU Cyber Sec Committee. Emmanuel Olayemi serves as the Co-chair. The club has been involved in several activities:

Activity	Date
February 5, 2020, NCCDC Qualifier: The BSU Bulldog Cyber Team participated in the 2022 MACCDC Qualifier. The National Collegiate Cyber Defense Competition (NCCDC) is the championship event for the Collegiate Cyber Defense Competition system – the largest college-level cyber defense competition in the USA. Web link: https://www.nationalccdc.org/	2/5/2022
March 18-19, 2022, NCCDC Regional Final: The BSU Bulldog Cyber Team participated in the 2022 MACCDC Regional Final. The BSU Bulldog Team is one of the eight teams to advance to the Regional Final.	3/18-3/19/2022
March 21-24, 2022. The BSU Bulldog Cyber Team participated in the 2022 MARITIME Control Systems Cyber Security Con and Competition.	3/21-3/24/2022
April 22-24, 2022. The BSU Bulldog Cyber Team participated in the National Cyber League (NCL) team event. The NCL is focused on empowering young people to help end the incessant cycle of poverty, prejudice, and injustice, whose impact after generations of neglect is playing out in our streets today.	4/22-4/24/2022

BULLDOG CODERS

In the Spring of 2022, Bulldog Coders was officially launched. On February 11th, we hosted the kick-off meeting to introduce the club to the campus officially. We have 50 students in the club. Here is the link to sign up for the club. https://forms.gle/CwAvsU7WMFm341Hu7

SCHOLARSHIPS

SMART Scholarship-for-Service Program
The Science, Mathematics, and Research for Transformation (SMART) Scholarship-for-Service Program, funded by the Department of Defense (DoD), is a combined educational and workforce development opportunity for STEM students. https://www.smartscholarship.org/smart

DoD Cyber Scholarship Program (CySP)
The DoD Cyber Scholarship Program (DoD CySP) is both a scholarship program for the DoD and a capacity-building tool for the nation. The program is a result of a commitment from the DoD and Congress to support higher education to prepare the DoD workforce to deal with threats against the Department's critical information system and networks. https://public.cyber.mil/cw/cdp/dcysp/

Adobe Research Fellowship
The Adobe Research Fellowship recognizes outstanding graduate students anywhere in the world carrying out exceptional research in the areas of computer science that are important to Adobe. https://research.adobe.com/fellowship/

Adobe Women-in-Technology Scholarship
The Adobe Research Women-in-Technology Scholarship recognizes outstanding female undergraduate and master's students studying Artificial Intelligence/Machine Learning, data science, computer science, or mobile/web development at North American universities (including Canada and Mexico). https://www.bowiestate.edu/academics/colleges/college-of-arts-and-sciences/departments/computer-science/resources-for-students/adobe-women-in-tech-scholarship.pdf

Futrend Technology Scholarship
Futrend Technology, Inc. (FUTREND) has been a system integrator supporting the federal government for over 20 years. FUTREND continues to seek talent to provide the best value to our customers. We recognize the importance of supporting students pursuing the Computer Science degree at Bowie State, as we know how rigorous it is.

RESEARCH GRANTS AND PUBLICATIONS

Dr. Jie Yan

2021-2022 Publications

Journal Papers
·   C. Turner, D. Richards, R. Agada, J. Yan, R. Jeremiah, and T. Chapman, "LUCID Network Monitoring and Visualization Application," Journal of The Colloquium for Information Systems Security Education, vol. 9, no. 1, p. 8, Mar. 2022, doi: 10.53735/cisse.v9i1.151.

Conference Papers
·   J. Yan, C. Turner, and D. Richards, "Animated Commentator Enhanced Network Monitoring and Visualization Application for Cyber Security Competition," in the 14th IEEE International Conference on Big Data Science and Engineering, Guangzhou, China, Dec. 2020.

·   X. Weifeng, J. Yan, D. Stone, "A Collaborative Forensic Framework for Detecting Advanced Persistent Threats," in the 2021 International Conference on Software Engineering and Knowledge Engineering (SEKE 2021), KSIR Virtual Conference Center, Pittsburgh, USA, Jul. 2021.

·   C. Turner, D. Richards, R. Agada, J. Yan, R. Jeremiah, and T. Chapman, "LUCID Network Monitoring and Visualization Application," in the 2021 Conference of the Colloquium on Information Systems Security Education (CISSE 2021), Nashville, USA, Oct. 2021.

·   M. Taeb, C. Hongmei, J. Yan, "Applying Machine Learning to Analyze Anti-Vaccination on Tweets," in the 2021 IEEE International Conference on Big Data (IEEE Big Data 2021), Virtual, Dec. 2021.

Conference Presentations
·   J. Yan, "Animated Commentator Enhanced Network Monitoring and Visualization Application for Cyber Security Competition," presented at IEEE Big Data SE conference, Virtual, Jan. 01, 2021.

·   J. Yan, "A Collaborative Forensic Framework for Detecting Advanced Persistent Threats," presented at the SEKE 2021 conference, Virtual, Jul. 08, 2021.

·   J. Yan, Group presentation with Drs. Turner, Richards, and Agada, "LUCID Network Monitoring and Visualization Application," presented at the CISSE conference, Virtual, Oct. 02, 2021.

Dr. Soo-Yeon Ji
Journal Publications

S.-Y. Ji, B. K. Jeong, C. Kamhoua, N. Leslie, and D. H. Jeong, "Forecasting network events to estimate attack risk: Integration of wavelet transform and vector auto regression with exogenous variables," Journal of Network and Computer Applications, vol. 203, p. 103392, Jul. 2022, doi: 10.1016/j.jnca.2022.103392.

S.-Y. Ji, B.-K. Jeong, and D. H. Jeong, "Evaluating visualization approaches to detect abnormal activities in network traffic data," International Journal of Information Security, May 2020, doi: 10.1007/s10207-020-00504-9.

Poster Presentation

M. Bagudu, S.-Y. Ji, "Identifying the High-Risk Social Media Messages by Analyzing Text Information," presented at the National Conferences on Undergraduate Research (NCUR), Virtual, 2021.

Dr. Darsana Josyula
Recent Publications

(Co-authors marked with an * are my advisees who directly worked under my supervision on published work).

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

E. Allogmani* and D. Josyula, "Mitigating the Effects of Attribute Noise Using Two-Level Filtering Learner Algorithm," in the 2022 World Congress in Computer Science, Computer Engineering, and Applied Computing (CSCE), 2022. (Accepted).

E. Allogmani* and D. Josyula, "Two-Level Filtering Learner Applied to a Noisy Malware Dataset," submitted to the International IEEE Conference on Intelligent Computing and Control Systems (ICICCS), 2022. (Accepted).

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 Proceedings of the AAAI Fall Symposium, 2021.

T. Clausner, C. Maxey, M. Goldberg, P. Zaidins, D. Josyula, J. Brody, and D. Perlis, "Overgenerality from Inference in Perspective-Taking," in Proceedings of the AAAI Fall Symposium, 2021.

D. Perlis, C. Bakalian, J. Brody, T. Clausner, M. Goldberg, A. Hamlin, V. Hsiao, D. Josyula, C. Maxey, S. Rabin, D. Sekora, J. Shamwell, and J. Silverberg, "Live and Learn, Ask and Tell: Agents over Tasks," in Marchi E., Siniscalchi S.M., Cumani S., Salerno V.M., Li H. (eds) *Increasing Naturalness and Flexibility in Spoken Dialogue Interaction*. Lecture Notes in Electrical Engineering, vol 714. Springer, Singapore, 2021.

J. Brody, B. Austin, O. Khater, C.J. Maxey, M.D. Goldberg, T. Clausner, D. Josyula, and D. Perlis, "Using Neural Networks to Control Glut in the Active Logic Machine," 15th International Workshop on Neural-Symbolic Learning and Reasoning, [NeSy'20/21 @ IJCLR](), 2021.

F. Onodueze*, D. Josyula, and J. Schaff, "Data Implantation - Creating Minority Samples for Extremely Imbalanced Datasets," American Council on Science & Education – CSCE, 2021.

B. Allogmany*, D. Josyula, and T. Alshalali*, "Handling Concept Drift using LSTM based Autoencoders," [The 17th International Conference on Data Science]() (ICDATA), 2021.

E. Allogmani* and D. Josyula, "Learning with Noisy Inconsistent Data," [The 17th International Conference on Data Science]() (ICDATA), 2021.

Presentations

D. Josyula, "Self- Adaptive Systems," presented at a tutorial at the International Conference on Signal Processing, Informatics, Communication and Energy Systems (IEEE SPICES) Mar. 10, 2022.

D. Josyula, [Knowledge of Self and Other Within a Broader Commonsense Setting](), presented at the AAAI Fall Symposium, Nov. 05, 2021.

D. Josyula, "Taking AI from the Lab to the World," BEYA 2021 Panel, Feb. 11, 2021.

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of the

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