National Center for
ACADEMIC EXCELLENCE
in Information Assurance

THE UNIVERSITY OF MEMPHIS®

Center for Information Assurance

Protecting America's Information Infrastructure

2024

MEET THE CENTER DIRECTOR

Dipankar Dasgupta
Hill Professor in Cybersecurity
Director | Center for Information Assurance

Univerity of Memphis

Dr. Dasgupta has been involved in developing robust AI/ML systems for cybersecurity applications and as an IEEE Distinguished Lecturer (2022-2024) giving talks on 5 topics (shown in the link) in many countries. Dr. Dasgupta also served as a panelist at the IEEE CAI, 2023 on Adversarial Machine Learning: Lesson Learned, Challenges & Opportunities (https://cai.ieee.org/2023/panels/). He has served as An Advisory Board Member of MIT GDC in Cyber Security since 2010.

The cybersecurity research conducted and concepts developed through the CfIA is used to educate, inform, and produce training resources on Cybersecurity for various agencies, including the U.S. Department of Homeland Security and the Federal Emergency Management Agency (FEMA). This work led by Dr. Dasgupta through the CfIA makes the UofM one of the leading universities in the country in regard to transforming cybersecurity research into an educational tool. As new technology continues to emerge, cybersecurity becomes increasingly critical for safety, security, and privacy.

CfIA remains at the cutting edge of research and advancements in the field, creating the ideal learning environment for students seeking a career with immense potential. “Students are greatly benefiting from pursuing the emerging area of Cybersecurity, where there are a significant number of job opportunities with high salaries,” Dasgupta said. “These jobs come to them because there is a critical need in all industries, whether it be in Education, Government, Healthcare, Manufacturing, Energy, Utilities, Legal, or Criminal Justice. The global market for trained individuals in Cybersecurity is projected to increase by 35% between 2021 and 2031 according to the US Bureau of Labor Statistics (BLS.gov). The University of Memphis’ (Computer Science department) provides a great opportunity to pursue this booming industry where available jobs out-number qualified candidates.
As Cybersecurity continues to grow in importance, more and more specialized roles are emerging.

DR. MYOUNGGYU WON

Computer Science
mwon@memphis.edu
Center Associate Director
CAE Alternate POC

Dr. Won's research focuses on innovating transportation systems towards smart and connected communities. He develops algorithms, protocols, and systems based on state-of-the-art sensing, computation, and wireless communication technologies to improve the safety, efficiency, and reliability of transportation. His work has been published in top-tier conferences and journals such as ICRA, MM, T-ITS, TOSN, and MobiHoc.

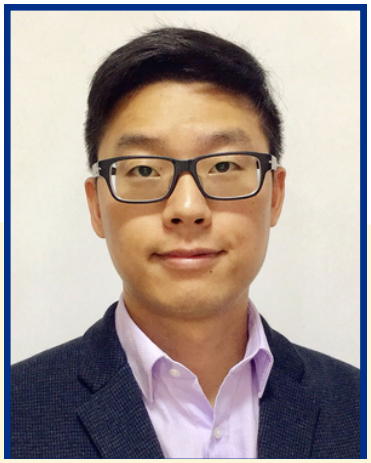
DR. MOHD. HASAN ALI

Computer Engineering
mhali@memphis.edu
Center Associate Director

Dr. Mohd. Hasan Ali is an Associate Professor at the Electrical and Computer Engineering Department, and leads the Electric Power and Energy Systems (EPES) Laboratory at the University of Memphis.

He is an Associate Director of the CfIA. His research interests include cybersecurity issues and solutions to modern power grids, electric vehicle charging station, 5G based communication system, smart-grid and micro-grid systems, renewable energy systems, and energy storage systems. Dr. Ali has more than 235 publications, including 4 books, 8 book chapters, 6 patents, 84 top ranked journal papers, 106 peer-reviewed international conference papers and 20 national conference papers. According to Google Scholar, as of June 2024, the total citations number of his published research is 6,131 with an h-index of 40 and i10-index 110.

DR. KAN YANG



Computer Science
Kan.Yang@memphis.edu
CyberCorps Co PI

Dr. Kan Yang joined the Department as a tenure-track assistant professor in Spring 2017. Dr. Yang received his B.Eng. degree in Information Security from the University of Science and Technology of China in 2008, and his PhD degree in Computer Science with outstanding research thesis award from City University of Hong Kong in 2013 supervised by Prof. Xiaohua Jia.

Dr. Yang has published more than 50 high quality papers that appear in prestigious venues including IEEE TIFS, TDSC, IOTJ, TPDS, TVT, TMM, TWC, COMMAG, WirelessMag, INFOCOM, ICDCS, and AsiaCCS. His research is well recognized, and his publications have received over 3400 citations (h-index of 27) .

COMMUNITY

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CENTER FOR INFORMATION ASSURANCE

The University of Memphis serves as the National Security Agency (NSA) Centers of Academic Excellence in Cyber Defense (CAE-CD) Regional Hub for Cyber Security Education and Research efforts in collaboration with private and public sectors in Tennessee. As a CAE-CD designated institution, the CfIA is recognized for its significant contributions to meeting the national demand for Information Assurance (Cybersecurity) and Cyber Defense education by training a growing number of professionals with Cybersecurity expertise in various disciplines. They will ultimately contribute to the protection of the National Information Infrastructures. As such, the Center for Information Assurance leads efforts to advance Cybersecurity education, research, and workforce development. The faculty directors of the CfIA are currently involved in several grant-funded projects which engage university students in their Cybersecurity education and research.

For more information regarding these projects, please refer to our webpage at www.Memphis.edu/cfia. A list of a few current projects include: the “Characteristics of Generative AI Tools for Creating Images”; “Drone-based Simulator Air Systems to Investigate Potential Cybersecurity Issues”, “Low Orbit Satellite Systems”; “Cybersecurity for EV Charging Stations”; and “Implementing a Zero Trust System for Federated Learning Frameworks”. The CfIA builds a strong cybersecurity community by hosting workshops throughout the year, faculty development events, student competitions, and facilitating high school outreach efforts; as well as collaborations with other CAE institutions and military partners across the region. The University of Memphis has demonstrated leadership as the regional resource center since 2004.

Welcome to the latest edition of the CfIA newsletter. We look forward to any collaboration opportunities you are considering.

ACTIVITIES

www.memphis.edu/cfia

CENTER FOR INFORMATION ASSURANCE

Hands-On Lab Projects

CfIA provides student-centered research environment where both undergraduates and postgraduates get to work on federal-funded projects, cyber defense competitions, along with codebreaking and security challenges

RESEARCH

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CYBERSECURITY RESEARCHERS

Amani Shehada Graduate Student
Electrical and Computer Engineering Department
Wireless Electric Vehicle Charging Systems

Amani's research is dedicated to developing a new machine learning-driven approach to protect wireless charging systems for electric vehicles from various cybersecurity attacks.

Afia Sushma Undergraduate Student
Computer Science Department
Artificial Intelligence and Dall-E.

Afia, coming from an arts background, aims to explore the performance gap in image generation by generative AI models from the perspective of art theory.

RESEARCH

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CYBERSECURITY RESEARCHERS

Hans Amelang Graduate Student
Computer Science Department
Low Earth Orbit Satellite

Hans is conducting research on cybersecurity threats and solutions for low-orbit satellite systems, focusing on developing a new machine learning model that defends against fingerprint-based attacks.

Thomas Branyan Undergraduate Student
Computer Science Department
Autonomous Car Driving

Thomas is implementing various cybersecurity attacks using a proof-of-concept autonomous vehicle system based on an R/C car, aiming to develop innovative solutions that enhance the resilience of autonomous driving.

RESEARCH

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CYBERSECURITY RESEARCHERS

Luke Hwang Undergraduate Student
Computer Science Department
Drone Spoof Detection

Luke has conducted a thorough survey of cybersecurity threats to drones and is developing a novel machine learning-based solution to defend against these threats.

Sagar Pathak Graduate Student
Computer Science Department
Cybersecurity for Federated Learning

Sagar has identified a potential cybersecurity risk in federated learning and has developed the first zero-trust framework for this domain.

NEWS & EVENTS

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September, 2023:

• Dr. Dipankar Dasgupta, director of the CfIA, gave a panel presentation on Sept. 14 at the monthly session of CAE-CD Community of Practice — Meet Your Fellow CAE-CD's. He presented to attendees the details regarding the course/degree offerings, current research projects and CfIA updates happening at the University of Memphis. In closing, he answered questions and welcomed any NCAE members who are interested in collaborating to reach out to him or any center's co-PI. These initiative presentations/events are intended to build connections within the NCAE-CD community.

• Dr. Myounggyu Won, assistant professor in the Computer Science department and co-director of the Center for Information Assurance, attended the 26th annual International Conference on Intelligent Transportation Systems (ITSC) from September 24-28 in Bilbao, Spain, where he presented a paper entitled “Intelligent Adaptive Electric Vehicle Motion Control for Dynamic Wireless Charging.” His research introduced a novel Machine Learning (ML) approach to control Electric Vehicle (EV) motion designed to optimize power transfer efficiency by effectively modeling the dynamically changing electromagnetic field from the transmitter coil of the dynamic wireless charging system. In addition to his presentation in Spain, Won also served as a session chair at the conference.

October, 2023:

• Dr. Dipankar Dasgupta, director of the Center for Information Assurance and professor of Computer Science, was invited to participate in a special topic workshop on Generative AI Tools for Cybersecurity in Chicago on September 21. The workshop was organized by NSA CAE-R as part of the Research Symposium. This invitation-only workshop was moderated by Dr. Benjamin Blakely, Argonne National Laboratory; Mr. Neil Fendley, Johns Hopkins Applied Physics Laboratory; and Dr. Bradford Kline, National Security Agency. The workshop focused on new challenges and upcoming opportunities of Generative Artificial Intelligence (AI), including risks to security and privacy.

• Dr. Dipankar Dasgupta, director of the Center for Information Assurance and professor of Computer Science, was a keynote speaker (virtually) at the 22nd International Conference on Cyberworlds (CW2023) (ieee.tn) in Sousse, Tunisia, on Oct. 4. Dasgupta is an IEEE CIS Distinguished Lecturer. His topic was "Artificial Immune Systems and their Applications." He is considered one of the founding fathers of Artificial Immune Systems (AIS), also known as Immunological Computation. He has many publications, including two books, on this topic. Dasgupta became a Fellow of IEEE in 2015 for his contributions to Immunological Computation and Bio-Inspired Cybersecurity.

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• Dr. Mohd Hasan Ali, Associate Professor, Electrical and Computer Engineering, was a Speaker on the topic "Cybersecurity Issues and Solutions to Distributed Energy Resources" at the AI-enhanced IoT Security Workshop held at North Carolina A&T University on October 27, 2023.

Dr. Mohd.Hasan Ali, associate professor in Electrical Computer Engineering, was recently a guest speaker on the topic "Cyber Resilient Wind Turbine Generator Control System" at the IEEE Day held at the Rajshahi University of Engineering and Technology, Bangladesh. He was also awarded a Certificate of Appreciation for speaking at the virtual AI-enhanced IoT Security Workshop, hosted by The North Carolina A&T State University Center for Cyber Defense (CCD) and The University of Memphis Center for Information Assurance (CfIA) on Oct. 27.

November, 2023:

• Dr. Mohd Hasan Ali, an Associate Professor with the Electrical and Computer Engineering Department, attended the kick-off meeting for the CTG-23 project held at the University of Arkansas System on November 14, 2023. The attendees were the Federal Emergency Management Agency (FEMA)/Department of Homeland Security (DHS) Program Managers and members of the National Cybersecurity Preparedness Consortium (NCPC) including the Project Principals and Lead Course Developers. Mr. Jack O'Meara, the Lead Course Developer at the Center for Information Assurance (CfIA) of the University of Memphis, accompanied Dr. Ali at the kick-off meeting.

• Dr. Mohd Hasan Ali published the following paper, the co-author is Dr. Manoj Basnet, UofM Alumni. The Research Paper is entitled: "Deep Reinforcement Learning-Driven Mitigation of Adverse Effects of Cyber-Attacks on Electric Vehicle Charging Station" in the MDPI Journal of Energies, 6(21), 7296, 2023.

• Prof. Dipankar Dasgupta, Computer Science department was a Keynote speaker (virtually) at the 22nd International Conference on Cyberworlds (CW2023) (ieee.tn) in Sousse, Tunisia. Dr. Dasgupta is an IEEE CIS Distinguished Lecturer. His topic was "Artificial Immune Systems and their Applications". He is considered as one of the founding fathers of Artificial Immune Systems (AIS) a.k.a. Immunological Computation. He has many publications including two books on this topic. Dr. Dasgupta became a Fellow of IEEE in 2015 for his contributions to Immunological Computation and Bio-Inspired Cybersecurity.

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Dr. Mohd. Hasan Ali ’s research paper “Residential Load Forecasting by PSO Tuned ANFIS2 Method Considering the COVID-19 Influence" has been approved for production and accepted for publication in Frontiers in Energy Research, Section: Smart Grids. Ali is an associate professor with the Electrical and Computer Engineering Department. His paper proposes a new adaptive neuro fuzzy-2 inference system (ANFIS2) for energy usage forecasting in residential buildings for both normal and COVID-19 periods. The particle swarm optimization (PSO) method has been implemented for parameter optimization and subtractive clustering is used for data training for the proposed ANFIS2 system. Simulation results obtained by the MATLAB software validate the efficacy of the proposed ANFIS2 system in residential load forecasting during both normal and COVID-19 periods. Ali’s former student Dr. S.M. Mahfuz Alam, associate professor at Dhaka University of Science and Technology, Bangladesh, co-authored the paper.

December, 2023:

• Dr. Dipankar Dasgupta, director of the Center for Information Assurance (CfIA) and professor of Computer Science, was recently awarded a Certificate of Appreciation for speaking at the virtual AI-enhanced IoT Security Workshop hosted by the North Carolina A&T State University Center for Cyber Defense (CCD) and the CfIA.

• The Center for Information Assurance (CFIA) received $991,208 under the NCAE program (Grant# H98230-21-1-0319) to continue the project "Cybersecurity Education for Critical Infrastructure Protection in Community Development through Regional Coalition." The project is being led by Dr. Dipankar Dasgupta, CfIA director, with faculty Dr. Mohd. Hasan Ali and Dr. Myounggyu Won, assistant professor of Computer Science (as co-PIs), who are also associate directors of the CfIA. This is a collaborative project with the University of West Florida, North Carolina A&T State University and the Citadel College. The team conducted several professional cybersecurity workshops and events during the last two years.

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January 2024:

• Dr. Mohd Hasan Ali, associate professor of Electrical and Computer Engineering in the Herff College of Engineering and co-director of the Center for Information Assurance (CfIA), received a $947,476 grant from the EnViron Renewable Energy LLC company to conduct a project entitled “Development of Training Program on Renewable Energy Systems” for a period of three years. This project aims to design an educational experience in renewable energy implementation across solar photovoltaic energy installation, electric vehicle charging stations and infrastructure and smart building technology.

• Dr. Dipankar Dasgupta, professor of Computer Science and director of the CfIA, was the featured speaker at the Distinguished Webinar Series in Artificial Intelligence and Cybersecurity on Jan. 23, and his topic Adaptive Multifactor Authentication & Cyber Identification. Authentication is a critical part to ensure the identity of a legitimate user. During authentication, an individual’s credential is validated with a specific computational technique to determine the association of the user with his/her claimed identity. In December, Dr. Dasgupta participated in the CIS/GRSS Jt. Chapter, IEEE Hyderabad Section in association with Department of CSE, JNTUH-UCESTH on the topic, “Generative AI from Historical Perspective.” The talk provided an historical background of Generative AI techniques and how they have evolved over the years. Dr. Dasgupta also explored research collaboration while in India.

• Dr. Mohd Hasan Ali, associate professor of Electrical and Computer Engineering and co-director of the CIFA received a patent on his in invention, “Triple-Function Battery Energy Storage System (BESS) for Hybrid Microgrid System.” The invention deals with an improved “3-in-1” BESS that performs three functions: improving the transient stability in a hybrid AC/DC microgrid (HMG) system during any fault; improving power quality in the HMG during any sudden load change and mitigating power and frequency fluctuations due to variations in wind speed and solar irradiance in the HMG.

April 26, 2024:

- Dr. Dasgupta gave an invited Guest Lecture (virtual) to Europe's CybAlliance WP3.3 consortium on "Adaptive Multi-Factor Authentication: From Next Generation Identity Ecosystems and Healthcare Perspective"; hosted by Dr. Sandeep Pirbhulal at Norwegian Computing Center, Oslo, Norway. The talk discussed the latest security breaches in healthcare critical infrastructure and how to prevent and defend against such emerging attacks with AI-powered technologies. He focused on a next generation identity ecosystem, called adaptive multi-factor authentication (A-MFA) which he has a patent.

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Dr. Myounggyu Won, Assistant Professor in the Computer Science department and Co-Director of the Center for Information Assurance, attended the 26th annual International Conference on Intelligent Transportation Systems (ITSC) from September 24-28 in Bilbao, Spain. There, he presented a paper entitled “Intelligent Adaptive Electric Vehicle Motion Control for Dynamic Wireless Charging.” His research introduced a novel Machine Learning (ML) approach to control Electric Vehicle (EV) motion designed to optimize power transfer efficiency by effectively modeling the dynamically changing electromagnetic field from the transmitter coil of the dynamic wireless charging system. In addition to his presentation in Spain, Dr. Won also served as a session chair at the conference.

• The University of Memphis' Cyber Tigers (Student Club), along with numerous teams from around the country, participated in a Capture the Flag competition at Raymond James Headquarters in Tampa, Florida on Saturday October 7, 2023. Students on the competition team for this event were Hans Amelang, Dylan Hensley, Kylan Plunk, Michael Kingma, and Johnathan Miller. Although the Cyber Tigers did not win the competition, the team members were given consideration for Raymond James internships and had an opportunity to win contest prizes of $10000, $5000, or $2500 respectively.

On October 26, 2023, Dr. Mohd Hasan Ali gave a talk on the topic “Exploring Cybersecurity Issues in 5G Enabled Electric Vehicle Charging Station with Deep Learning” at the “Getting to Know Your Fellow CAE-R” event organized by the CAE Community. Also, Dr. Myounggyu Won presented a talk entitled "Cybersecurity Summer Camp for High School Students Using Autonomous R/C Cars". (https://www.caecommunity.org/).

Dr. Mohd Hasan Ali's research paper entitled "A Simulated-Annealing-Quasi-Oppositional-Teaching-Learning Based Optimization Algorithm for Distributed Energy Resources Allocation" has been accepted for publication in the MDPI Journal of Computation, 2023.

• A Research Paper by Dr. Mohd Hasan Ali, Associate Professor in the Electrical and Computer Engineering Department, entitled "A Simulated-Annealing-Quasi-Oppositional-Teaching-Learning Based Optimization Algorithm for Distributed Energy Resources Allocation" has been accepted for publication in the MDPI Journal of Computation, 2023.

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Dr. Myounggyu Won, Assistant Professor, Computer Science department, attended the "Getting to Know Your Fellow CAE-R" event on October 26, where he presented his paper, “Cybersecurity Summer Camp for High School Students Using Autonomous R/C Cars.” His research showcased an innovative method of integrating cybersecurity with computer science for K-12 education. He also shared insights from the hands-on projects and activities that he developed for a cybersecurity summer camp which he hosted the Summer of 2023.

• Dr. Mohd Hasan Ali, Associate Professor, Electrical and Computer Engineering, was a Speaker on the topic "Cybersecurity Issues and Solutions to Distributed Energy Resources" at the AI-enhanced IoT Security Workshop held at North Carolina A&T University on October 27, 2023.

• Dr. Mohd Hasan Ali published the following paper, the co-author is Dr. Manoj Basnet, UofM Alumni. The Research Paper is entitled: "Deep Reinforcement Learning-Driven Mitigation of Adverse Effects of Cyber-Attacks on Electric Vehicle Charging Station" in the MDPI Journal of Energies, 6(21), 7296, 2023.

• Dr. Dipankar Dasgupta, Director of the Center for Information Assurance and Professor of Computer Science: On behalf of The Center for Cyber Defense at North Carolina A&T State University, we are honored to award Dr. Dasgupta a Certificate of Appreciation for speaking at our virtual AI-enhanced IoT Security Workshop, hosted by The North Carolina A&T State University Center for Cyber Defense (CCD) and The University of Memphis' Center for Information Assurance (CfIA) on Friday, October 27th, 2023.

• Dr. Mohd. Hasan Ali’s Research Paper titled “Residential Load Forecasting by PSO Tuned ANFIS2 Method Considering the COVID-19 Influence" has been approved for production and accepted for publication in Frontiers in Energy Research, Section: Smart Grids. Dr. Ali is an Associate Professor with the Electrical and Computer Engineering Department at the University of Memphis. His paper proposes a new adaptive neuro fuzzy-2 inference system (ANFIS2) for energy usage forecasting in residential buildings for both normal and COVID-19 periods. The particle swarm optimization (PSO) method has been implemented for parameter optimization and subtractive clustering is used for data training for the proposed ANFIS2 system. Simulation results obtained by the MATLAB software validate the efficacy of the proposed ANFIS2 system in residential load forecasting during both normal and COVID-19 periods. Dr. Ali’s former student Dr. S.M. Mahfuz Alam (Associate Professor at Dhaka University of Science and Technology, Bangladesh) co-authored this paper.

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• Dr. Mohd Hasan Ali, Assoc. Professor in Electrical Computer Engineering, was a Guest Speaker on the topic "Cyber Resilient Wind Turbine Generator Control System" at the IEEE Day held at the Rajshahi University of Engineering and Technology (RUET), Bangladesh, on December 1-2, 2023. He was also awarded a Certificate of Appreciation for speaking at the virtual AI-enhanced IoT Security Workshop, hosted by The North Carolina A&T State University Center for Cyber Defense (CCD) and The University of Memphis Center for Information Assurance (CfIA) on October 27th, 2023.

• The Center for Information Assurance (CFIA) received $991,208 under the NCAE program (Grant# H98230-21-1-0319) to continue the project "Cybersecurity Education for Critical Infrastructure Protection in Community Development through Regional Coalition". The project is being led by Prof. Dipankar Dasgupta, Center Director with faculty Dr. Mohd Hasan Ali, Assoc. Professor in Electrical Computer Engineering and Dr. Myounggyu Won, Assistant Professor of Computer Science (as Co-PIs) who are also Associate Directors of the Center for Information Assurance. This is a collaborative project with three (3) other partner Universities including University of West Florida, North Carolina A&T State University, & the Citadel College. The team conducted several professional cybersecurity workshops and events during the last two years.

• Dr. Mohd Hasan Ali, an Associate Professor of Electrical and Computer Engineering in the Herff College of Engineering, and Co-Director of the Center for Information Assurance (CfIA), received a $947,476 grant from the EnViron Renewable Energy LLC company to conduct a project entitled“Development of Training Program on Renewable Energy Systems” for a period of 3 years (01/01/2024 - 12/31/2026). This project aims to design an educational experience in renewable energy implementation across Solar Photovoltaic (PV) energy installation, Electric Vehicle (EV) charging stations and infrastructure, and also smart building technology.

• In December 2023, Dr. Dipankar Dasgupta, Professor Computer Science and Director of the CFIA, gave an invited talk in Hyderabad, India. The talk was held at the CIS/GRSS Jt. Chapter, IEEE Hyderabad Section in association with Department of CSE, JNTUH-UCESTH. Topic: “Generative AI from Historical Perspective”. The talk provided an historical background of Generative AI techniques and how they have evolved over the years. There are two major types of Generative AIs: Neural Network-Based LLMs and the Specialized GenAI-Models, while NN-Based LLMs are currently dominant in practice. Dr. Dasgupta also explored research collaboration while in India.

NEWS & EVENTS

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• Dr. Mohd Hasan Ali, Associate Professor, Electrical and Computer Engineering Department, and Co-Director of CFIA, got his invention “Triple-Function Battery Energy Storage System (BESS) for Hybrid Microgrid System” patented on January 02, 2024 (US Patent number: 11862979). The invention deals with an improved “3-in-1” BESS that performs three functions: (1) Improving the transient stability in a hybrid AC/DC microgrid (HMG) system during any fault; (2) Improving power quality in the HMG during any sudden load change; and (3) Mitigating power and frequency fluctuations due to variations in wind speed and solar irradiance in the HMG. The same control and structural design are used for all three functions, and the improved BESS thus is adaptive to the changing operating situations within the HMG and eliminates the requirement for a number of higher cost auxiliary control devices. The control structure of the improved BESS is simple, so it is easier and cheaper to manufacture, and can be easily implemented in practice, and retrofitted into existing HMGs.

• Dr. Dipankar Dasgupta Professor Computer Science and Director of CFIA, was the Featured Speaker at the Distinguished Webinar Series In Artificial Intelligence and Cybersecurity on January 23, 2024. His Topic: Adaptive Multifactor Authentication & Cyber Identification. Authentication is a critical part to ensure the identity of a legitimate user. During authentication, an individual’s credential is validated with a specific computational technique to determine the association of the user with his/her claimed identity. The Distinguished Speaker Webinar Series is aimed to advance the state-of-the-art concepts and methods in artificial intelligence and cyber security areas. The series is jointly hosted by the Center for Cyber Security Research (C2SR), the Artificial Intelligence Research (AIR) Initiative, and the School of Electrical Engineering and Computer Science (SEECS) at the University of North Dakota College of Engineering with support from University of Minnesota, North Dakota State University, University of Miami, Texas A&M Kingsville, University of Connecticut and West Virginia University.

•Dr. Mohd Hasan Ali, an Associate Professor of Electrical and Computer Engineering Department at the Herff College of Engineering and an Associate Director at the Center for Information Assurance (CfIA) recently published the following two high quality journal articles: 1) "Mitigating Cyber Anomalies in Virtual Power Plants Using Artificial Neural Network-based Secondary Control with Federated Learning-Trust Adaptation," MDPI Journal of Energies, 2024, 17(3), 619; https://doi.org/10.3390/en17030619. 2) "Cyber Resilient Converter Control System for DFIG Protecting AmericasInformation Infrastructure Spring 2023 Based Wind Turbine Generator," MDPI Journal of Electronics, 2024, 13(3), 492; https://doi.org/10.3390/electronics13030492.

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• Dr. Mohd Hasan Ali, Associate Professor of Electrical & Computer Engineering Department, & Asso. Director of the Center for Information Assurance, will be presenting the following (2) two research articles at the IEEE SoutheastCon 2024 Conference to be held in Atlanta, GA on March 20-23, 2024. #1) “An Ensemble Learning Based Cyber Attack Detection Technique for BESS Integrated PV System,". #2) “Development of Controllers for Compensating Misalignment in Vehicle-To-Vehicle Dynamic Wireless Charging System”.

• Dr. Mohd Hasan Ali, an Associate Professor with the Electrical and Computer Engineering Department and an Associate Director of the Center for Information Assurance at the University of Memphis, recently published his research article titled "A Modified Modeling Approach of Virtual Power Plant Via Improved Federated Learning", at the International Journal of Electrical Power and Energy Systems, Volume 158, 2024, 109905, ISSN 01420615, https://doi.org/10.1016/j.ijepes.2024.109905 (https://www.sciencedirect.com/science/article/pii/S0142061524001261). This paper proposes a novel Virtual Power Plant modeling utilizing multi-task federated learning modernized by multi-pattern modeling to decentralize the energy management system processing.

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CONTINUING TRAINING GRANT & CECIP LAB STUDENTS

- Syeda Afra Saiara
- Sai Vodapally
- Suayeb Ahmed
- Sagar Pathak
- Trinadh Kumar Grandhi
- Furak Ahmed
- Md. Nahin Islam
- Luke Hwang
- Thomas W. Branyan
- Aniqa Ali
- Hans Amelang
- Afia Sushma
- Amani Shehada

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Center for Information Assurance

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Associate Director & Alternate (POC):
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Associate Director :
Dr. Mohd Hasan Ali

CyberCorps Co PI:
Dr. Kan Yang

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