



# DEPARTMENT OF **ELECTRICAL & COMPUTER ENGINEERING**



**MISSISSIPPI STATE**  
UNIVERSITY™

## ECE DEPARTMENT HEAD LETTER



Our Department of Electrical and Computer Engineering faculty and staff displayed excellence through several significant achievements during the 2024-25 academic year.

Yong Fu was named an IEEE Fellow for contributions to computational optimization and parallel computing for power system operation. Masoud Karimi was named an IEEE Fellow for contributions to synchronization, modeling and control of power electronic converters in DC/AC applications. The ECE faculty now

includes four IEEE fellows. In addition, John Ball was named a Mississippi State University Grisham Master Teacher and won the Outstanding Faculty Advisor Award for the EcoCar EV Challenge. Vuk Marojevic was named the Paul B. Jacob Chair in the Department of Electrical and Computer Engineering and won the MSU Mid-Career Research Scholar Award. Seungdeog Choi won the Bagley College of Engineering Outstanding Researcher Award. Jean Mohammadi-Aragh won the BCoE Teaching Award for Distance Learning and was named to the BCoE Academy of Distinguished Teachers.

Mehedi Farhad, a recent ECE doctoral graduate, won the 2024 BCoE Graduate Student Research Award. Nisha Adhikari, a computer engineering major, won the 2024 BCoE Undergraduate Student Research Award. Jigar Bhatt, a May 2025 computer engineering graduate, was named to the BCoE Student Hall of Fame. Brittin Perdue, an electrical engineering major, was named as a national Barry Goldwater Scholar in addition to being named a national Astronaut Scholar. Noah Gregory, a computer engineering major, received a G.V. "Sonny" Montgomery Scholarship. Apollo Stafford, a computer engineering major, received a Benjamin A. Gilman International Scholarship.

Congratulations to all our honorees, and thank you for making us proud to be part of ECE at MSU.

### Hail State!

J. Patrick (Pat) Donohoe, Ph.D., P.E

*ECE Interim Department Head and Professor Emeritus*

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**GLENN R. WILSON**, Southern Company – Principal Research Engineer

**NICOLAS YOUNAN**, MSU – Retired ECE Department Head

# ECE BY THE NUMBERS\*

122



JOURNAL ARTICLES  
PUBLISHED BY FACULTY

90

CONFERENCE PAPERS  
PRESENTED BY FACULTY



OVER  
700

Undergraduate and  
Graduate Students



27 FACULTY  
Members including  
7 ENDOWED  
PROFESSORS



113  
UNDERGRADUATE  
DEGREES AWARDED



116 CO-OP  
& INTERNSHIP  
PLACEMENTS



133@4.0  
Fall ECE Students

Approximately  
100 PH.D.  
ECPE STUDENTS



\$13.87

MILLION

in Research Expenditures



\*2024 DATA



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## VISIT US

406 Hardy Road, 216 Simrall Hall  
Mississippi State, MS 39762



## UNDERGRADUATE STUDENT SPOTLIGHT ANDRIC S. KNOTT

MAJOR: Electrical Engineering

CLASSIFICATION: Senior

HOMETOWN: Hattiesburg, MS

INVOLVEMENT: Bagley College of  
Engineering Ambassadors, MS State Spirit  
Squads, Beta Upsilon Chi Fraternity, Rho Chi  
- IFC Recruitment Coordinator and more

### WHY IS MAJORING IN ELECTRICAL ENGINEERING A GOOD CHOICE?

This major is so great because we get to do and see things a lot of other majors do not get to experience. From interactions, labs and even off-campus opportunities through co-ops and internships. The limitless opportunities are what make this program so unique and useful!

### WHAT IS YOUR FAVORITE PART ABOUT THE ECE DEPARTMENT?

I love the labs we have in ECE and how I get firsthand, hands-on experience and meet new people.

### WHAT HAS PREPARED YOU FOR EMPLOYMENT AFTER YOU EARN YOUR DEGREE?

I would say my co-op has prepared me for post-graduation. It has given me practical experience and skills, a solid network of peers, leadership opportunities, and knowledge of what is ahead in civilian jobs and within the military.

### HOW HAS BEING INVOLVED IN A VARIETY OF ACTIVITIES IMPACTED YOUR TIME AT MSU?

I enjoy being involved in a series of activities because it allows me to meet new people, network and is a built-in social time within my schedule!

### WHAT IS YOUR FAVORITE PART ABOUT MSU?

I love MSU's ice cream and college game days! It's been amazing to be in multiple areas during games to experience a new way each time and be a witness wherever the Lord has placed me!

## **ECE GRADUATE STUDENT AWARDEES**

### **2023-24 MSU Graduate Student Hall of Fame**

Mehedi Farhad

### **2023-24 BCoE Graduate Student Research Award**

Mehedi Farhad

### **2024-25 ECE Best Teaching Assistant**

Chase Robinson

### **2024-25 ECE Best Graduate Researcher**

Sabyasachi Biswas

### **2024-25 ECE Research Symposium**

**First Place:** Sultan Mohammad Manjur

**Second Place:** Abdelmoula El Yazizi

**Third Place:** Hossein Mohammadi

## **GRADUATE DEGREES AWARDED SPRING 2024**

### **PH.D. DISSERTATIONS:**

STUDENT: SIMEGNEW YIHUNIE ALABA

Major Professor: John Ball

Title: Wavelet-Enhanced 2D and 3D  
Lightweight Perception Systems for  
Autonomous Driving

STUDENT: WALAA HAMDI AL-QWIDER

Major Professor: Vuk Marojevic

Title: Deep Reinforcement Learning Based  
Spectrum Coexistence for Advanced  
Wireless Networks

STUDENT: ASHIK AMIN

Major Professor: Seungdeog Choi

Title: Common-Mode EMI Characterization  
and Mitigation in Networked Power  
Electronics-Enabled Power Systems

STUDENT: MD MEHEDI FARHAD

Major Professor: Ali Gurbuz

Title: Estimating Surface Reflectivity with  
Smartphone and Semi-Custom GNSS Receivers  
on UAS-based GNSS-R Technology and Surface  
Brightness Temperature using UAS-based L  
Band Microwave Radiometer

STUDENT: DINH LE

Major Professor: David Wallace

Title: Common Mode Electromagnetic  
Interference Attenuation for DC/AC Inverters  
Using Enhanced Sinusoidal Frequency  
Modulation Technique

STUDENT: M. M. NABI

Major Professor: John Ball

Title: Deep Learning Based Soil Moisture  
Retrieval Using GNSS-R Observations  
from CYGNSS

### **M.S. THESES:**

STUDENT: BRANDON BLACK

Major Professor: Samee Khan

Title: Optimal Multi-Target Navigation in  
Complex Environments via Generalized  
Voronoi Diagram Graph Structures

STUDENT: AJAYA DAHAL

Major Professor: Ali Gurbuz

Title: Software Defined Radio-Based Sensing

STUDENT: MACKENZIE ELLENBERGER

Major Professor: Samee Khan

Title: Quantum Task Mapping for Large-scale  
Heterogenous Computing Systems

STUDENT: JEFFREY GREER

Major Professor: Samee Khan

Title: MITRE Attack Framework Adaptation in  
UAV Usage During Surveillance and  
Reconnaissance Missions

STUDENT: HUNTER HARRIS

Major Professor: Samee Khan

Title: Resource Description Framework Parsing  
Method on the UAS Integration Safety and  
Security Technology Ontology

STUDENT: KAZI NISHAT TASNIM

Major Professor: Masoud Karimi

Title: Mitigating Delay and Coupling Effects in  
a High-Speed PMSM Drive Using an Optimal  
Multivariable Control Approach

STUDENT: WALKER THAMES

Major Professor: Ryan Green

Title: A Modular Compact kW-Class IPOS DC-DC  
Converter for Pulsed Power Applications

**M.S. NON-THESES:** DAEGAN APPEL, DAVID  
BRAND, VENKATA MANIKANTA SURYA VIKASH  
ILAPAKURTHY, TRISTAN MORGAN, AARON  
POWELL, VIVEK SINGH

## **SUMMER 2024**

### **PH.D. DISSERTATIONS:**

STUDENT: FAHMIDA ISLAM

Major Professor: John Ball

Title: Robust Longitudinal Velocity Control for  
Advanced Vehicles: A Deep Reinforcement  
Learning Approach

STUDENT: AMINE TAOUDI

Major Professor: Chaomin Luo

Title: Optimal Control and Navigation of  
Electrified and Unmanned Ground Vehicles  
with Bio-inspired and Optimization Approaches

### **M.S. THESES:**

STUDENT: AHMED MANAVI ALAM

Major Professor: Ali Gurbuz

Title: Deep Learning-Based Radio Frequency  
Interference Detection and Mitigation for  
Microwave Radiometers with 2D  
Spectral Features

STUDENT: MATTHEW BEACH

Major Professor: Samee Khan

Title: A Graphical User Interface Application  
for Querying the Unmanned Aerial System  
Integration Safety and Security  
Technology Ontology

STUDENT: JAGDEO S. SINGH

Major Professor: John Ball

Title: Architecture Selection and Propulsion  
Supervisory Control Strategies for All-wheel  
Drive Electric Vehicles

**M.S. NON-THESES:** ALEXANDER ROGERS

## **FALL 2024**

### **PH.D. DISSERTATION:**

STUDENT: PRADEEP CHINTAM

Major Professor: Chaomin Luo

Title: Sampling Space and Deep Reinforcement  
Learning Based Robot Navigation

### **M.S. THESES:**

STUDENT: TYLER MAY

Major Professor: Masoud Karimi

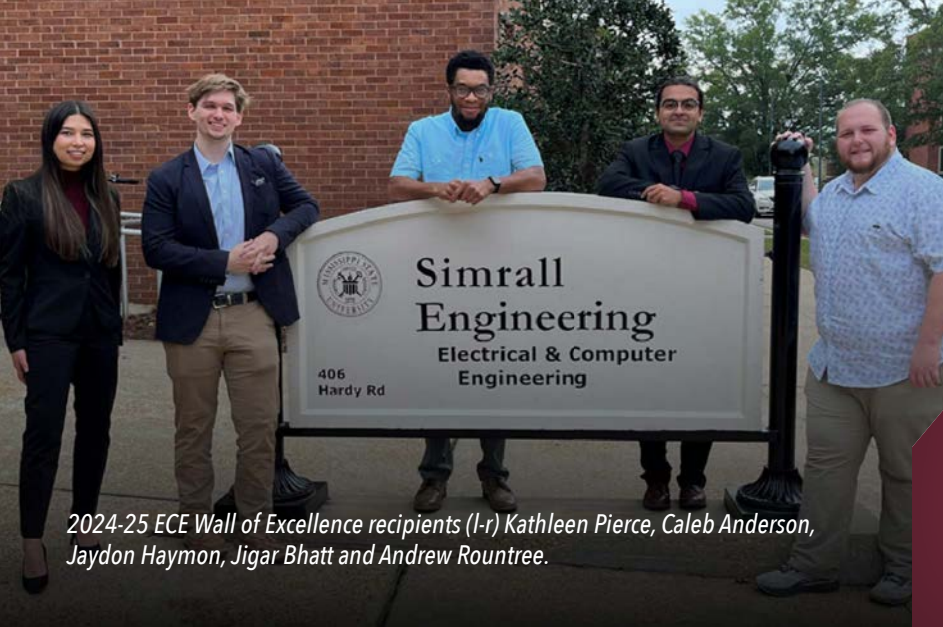
Title: Review of Inverter Functionality  
Requirements in IEEE 1547 for Voltage Fault  
Ride-Through

STUDENT: PHALGUNI MORLA

Major Professor: David Wallace

Title: Comparative Analysis of Conventional  
and Non-Conventional Current Transformers:  
Advancements, Applications, and Implications  
for Modern Power Systems

**M.S. NON-THESES:** ARAVIND BETHINI,  
JOSEPH COKER, JERRICK DUBOSE,  
WILLIAM GRAY



2024-25 ECE Wall of Excellence recipients (l-r) Kathleen Pierce, Caleb Anderson, Jaydon Haymon, Jigar Bhatt and Andrew Rountree.

## ECE UNDERGRADUATE WALL OF EXCELLENCE RECIPIENTS

Five students were inducted to the department's 2024-25 Wall of Excellence, which recognized students who demonstrated a commitment to academics and involvement at Mississippi State.

### CALEB ANDERSON

Major: Electrical Engineering  
Hometown: Ocean Springs

Named a President's Scholar numerous times, Caleb Anderson is an active member of the Bagley College of Engineering Ambassadors, giving tours and participating in outreach efforts. In the department, he served as the lead undergraduate researcher to four other students, providing leadership in their work of path planning algorithms and optimization with an ECE faculty member. In addition, his capstone design team was awarded second place for its work on a home-monitoring device equipped with motion detection and image processing. He has also participated in study abroad and completed two internships. ●

### JAYDON HAYMON

Major: Electrical Engineering  
Hometown: Pearl

Jaydon Haymon has been in a variety of campus organizations, including Men of Excellence, the Famous Maroon Band, and Theta Tau Professional Engineering Fraternity. Haymon mentors students in both the Foundations in ECE and Foundations in Design courses, helping teach technical skills and serving as manager for first-year student teams. He has also served as a tutor for the Center for Academic Excellence, tutoring students in math and circuits courses. Haymon has been President's Scholar and completed noteworthy professional enrichment opportunities, such as participating in study abroad and in the co-op/internship program. ●

### ANDREW ROUNTREE

Major: Electrical Engineering  
Hometown: Ocean Springs

Andrew Rountree is an inductee from Mississippi State University's Engineering on the Coast. He is actively engaged on campus as the IEEE Student Branch Chair. He supports faculty as an IT student worker, troubleshooting hardware and software issues, and mentors peers in digital and electronics labs, offering hands-on guidance and fostering a collaborative learning environment. As part of his program, he also participated in Bagley's study abroad program by taking the Engineering Economy in Europe course. ●

### JIGAR BHATT

Major: Computer Engineering  
Hometown: Collierville, TN

Jigar Bhatt served as a supplemental instructor for Introduction to Circuits, an ECE mentor for the department's introductory classes, and a Bagley Ambassador. He has participated extensively in undergraduate research with Taebi Lab in the Department of Agricultural and Biological Engineering, focusing on a low-cost, multimodal cardiac monitoring system. This work has been highlighted in two undergraduate research symposia and culminated in his co-authoring a conference paper. Bhatt also participated in ECE's RIS Lab, which led to his participation in the Graduate Student Research Symposium despite only being an undergraduate student. He is a member of the Shackouls Honors College, Tau Beta Pi Honor Society and Lambda Sigma Honor Society. He was also named to the Bagley College of Engineering's Hall of Fame. ●

### KATHLEEN PIERCE

Major: Computer Engineering  
Hometown: Flowood

In addition to being an ECE mentor for the department's introductory course, Kathleen Pierce has served as both a supplemental instructor, leader and mentor for the Center for Academic Excellence, starting her SI work in the Intermediate Computer Programming course. Her other campus involvement includes being a Bagley Ambassador and a member of the Famous Maroon Band. Pierce also participates in undergraduate research with MSU's High Performance Computing Collaboratory, and she completed experiential learning with co-ops at two companies. ●

# ECE ALUMNI HONORS

Electrical Engineering alumnus **Anthony L. Wilson** received an honorary Doctor of Public Service degree for his contributions to MSU and Mississippi. MSU President Mark E. Keenum presented the award during spring commencement.

Wilson, a 1987 Bagley College of Engineering graduate, recently concluded a three-year term as chair of the MSU Foundation after serving for three years as vice chair. He is currently on the Bagley College of Engineering Advisory Council

and was honored as the Alumnus of the Year in 2023. He also serves on the ECE Advisory Board.

Wilson is chairman and CEO of Mississippi Power, which provides clean, safe, reliable and affordable electricity to East Central and Southeast Mississippi. He has worked more than 40 years for Mississippi Power and the Southern Company system, starting in 1984 as an engineering cooperative education student in Biloxi. ●



Anthony L. Wilson



Vineetha Maya Menon

Electrical and Computer Engineering alumna **Vineetha Maya Menon** was named to Mississippi State University's Reveille 25 Class of 2025.

MSU's Alumni Association recognizes the remarkable accomplishments of the university's young alumni through this award, which was created in 2021.

Menon graduated from MSU with a doctoral degree in electrical and computer

engineering in 2016. A native of Bengaluru, India, Menon is a leader in artificial intelligence and data science. She serves as the Dr. Terence Reed Endowed Associate Professor of Computer Science at the University of Alabama in Huntsville.

As the director of the Big Data Analytics Lab, she specializes in Explainable AI, AI-driven drug discovery,

cybersecurity and human-AI trust in autonomous systems. Menon co-founded Circle LLC, an AI-powered consulting firm, and BiobankingAI, which optimizes the software management of biosample data. Recognized with awards from IEEE and the National Academy of Sciences, Engineering and Medicine, she also mentors individuals in STEM fields. ●

ECE alumnus **Shane Allen McCullough** was selected by the Bagley College of Engineering as one of its Distinguished Fellows. The distinction recognizes Mississippi State alumni from various industries for their accomplishments and commitment to the engineering field.

McCullough is the president and founder of McCullough Engineering Services, Inc. After earning a Bachelor of Science in electrical engineering from MSU in 1992, McCullough began his career in the marine electrical engineering industry. With over 30 years of experience, he has

developed extensive expertise in shipboard power management systems, machinery automation control systems and electric drive propulsion. Throughout his career, he has worked in government and commercial marine sectors. He is also a licensed Professional Engineer in Mississippi.

McCullough's career has taken him across the United States and internationally. He started with a small switchgear manufacturer along the Gulf Coast before spending six years in Europe working in the cruise ship construction industry. Upon returning to the U.S., he founded McCullough Engineering Services and

contributed to constructing various vessels, including large deck amphibious ships, icebreakers and commercial dredges. ●



Shane Allen McCullough

## FACULTY HIGHLIGHTS AND HONORS



### JOHN E. BALL

#### *Grisham Master Teacher and EcoCAR Advisor Award*

Professor and Robert D. Guyton Chair John Ball was honored as a Grisham Master Teacher at MSU for 2024. The prestigious teaching honor, first presented in 1993, recognizes the highest level of teaching excellence.

Ball also received the 2023-24 Faculty Advisor Award as part of the EcoCAR Mobility Challenge's Year 2 Competition. ●



### SEUNGDEOG CHOI

#### *BCE Faculty Research Winner*

Professor Seungdeog Choi was honored as a Bagley College of Engineering Faculty Research winner for 2024. His academic and research fields of interest include design and control of power electronics and electric machines, wireless power transfer systems, battery management and control systems, and condition monitoring and diagnosis of general power electronics and microgrid systems. He was also part of a team that recently secured a patent. ●



### YONG FU

#### *IEEE Fellow*

Professor Yong Fu was named an IEEE Fellow for his contributions to computational optimization and parallel computing for power system operation. The IEEE Fellow distinction is reserved for select IEEE members whose extraordinary accomplishments in any of the IEEE fields of interest are deemed fitting of this prestigious grade elevation. ●



### MASOUD KARIMI

#### *IEEE Fellow*

Professor Masoud Karimi was named an IEEE Fellow for contributions to synchronization, modeling and control of power electronic converters in DC/AC applications. The distinction is an acknowledgement of his accomplishments in the field and given by IEEE, the trusted voice for engineering, computing and technology information around the globe. ●

## FACULTY HIGHLIGHTS AND HONORS



### VUK MAROJEVIC

#### *Mid-Career Research Scholar Award*

Professor and Paul B. Jacob Chair Vuk Marojevic was recognized with MSU's Mid-Career Research Scholar Award. The award is co-sponsored by the Office of Research and Economic Development and the Division of Agriculture, Forestry and Veterinary Medicine to recognize outstanding researchers. ●



### JEAN MOHAMMADI-ARAGH

#### *Associate Department Head, Faculty Leadership Participant, BCoE Academy of Distinguished Teachers*

Associate Professor Jean Mohammadi-Aragh was named as the department's first associate department head in the fall semester, serving as the primary advisor to the department head relative to management and operations of the department, among other responsibilities.

In addition, she was named as one of 20 to participate in MSU's 2024-25 Faculty Leadership Program, which was developed to enhance skills in preparation for future leadership roles in an eight-month program. She was also named to the 2024-25 Bagley College of Engineering's Academy of Distinguished Teachers. ●



Three Department of Electrical and Computer Engineering members were recognized by as part of the university's annual awards for outstanding teaching, mentoring and advising of students.

David Wallace, an assistant clinical professor and manager of the High Voltage Laboratory, was recognized with the Donald Zacharias Early Career Undergraduate Teaching Excellence Award. This teaching award recognizes individuals who make an impact in the classroom at MSU, mainly with undergraduate students. He has taught various courses, including Electromagnetics II, Power System Relay Control and Fundamentals of High Voltage Engineering. In addition to teaching, he manages the Paul B. Jacob High Voltage Laboratory.

Program Coordinator Kylie Crosland was recognized with the Irvin Atly Jefcoat Excellence in Advising for staff advising. She is the academic advisor for electrical engineering students. She has also served in various leadership positions for advising for MSU's Academic Advisors Council and Region 4 NACADA: The Global Community for Academic Advising.

Academic Coordinator Alison Stamps was named the Wesley Ammon Outstanding New Staff Advisor. A member of the department since 2021, she is the advisor for computer engineering undergraduate students. In addition to advising, she assists in the planning of events and outreach that help with the department's student success initiatives. ●

(l-r) Alison Stamps, David Wallace and Kylie Crosland

# MAKE AN IMPACT

Through the generosity of alumni and donors, the Department of Electrical and Computer Engineering continues to grow its legacy in the James W. Bagley College of Engineering. The generosity of those who give is influencing the next generation of leaders. Individuals wishing to invest have many opportunities, including scholarships, endowments, named awards and facility enhancements. Please visit [www.ece.msstate.edu/giving](http://www.ece.msstate.edu/giving) or contact us directly to discuss the impact that you can make on the department and its students.

## J. PATRICK (PAT) DONOHOE, PH.D., P.E

*ECE Interim Department Head and Professor Emeritus*  
Electrical and Computer Engineering

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MISSISSIPPI STATE UNIVERSITY™  
JAMES WORTH  
**BAGLEY**  
COLLEGE OF ENGINEERING

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