

ELECTRICAL AND COMPUTER ENGINEERING

Mississippi State University

It continues to be my honor to serve you in the capacity of Department Head. Looking back at my first year at the State, I am so proud of the many achievements of the ECE alumni, students, staff, and faculty. We have broken all past records of research expenditures, scholarly publications, and graduations. (See, <https://www.ece.msstate.edu/about/>.) Although you will be reading about several of these topics in this issue of the newsletter, I highly encourage you to subscribe to our social media outlets so that you will not miss the great things happening at ECE.

I will take this opportunity to congratulate Dr. Pat Donohoe and Mrs. Teresa Stewart on their retirement. I am so grateful for their service to ECE and MSU. All of us at ECE will miss having them around.

Hail State!

-Dr. Samee Khan, ECE Department Head

The ECE Department would like to congratulate Dr. Pat Donohoe and Teresa Stewart on their retirement. The department graciously thanks them for their service. Dr. Donohoe served as a professor for 35 years in the department. Teresa has been on campus since 1994, 27 years, and served as the Business Manager for 11 years in the ECE Department. Best wishes to the two of them!

Undergraduate Update

Spring 2021 term went by in a flash! Learning in the time of COVID has certainly highlighted innovations in Electrical and Computer Engineering. We are looking forward to Fall term back in classrooms, but this experience has opened possibilities to serve a larger community at the undergraduate level. As a department, we are working on approvals to offer more coursework via distance to expand the reach of MSU-ECE. In spite of the challenges, our students have thrived. Over the 2020-2021 academic year, we have sent 113 graduates out into the world. Many ECE students were the recipients of awards and scholarships and are leaders on campus. To highlight a few:

- Intro to ECE Design Teams: Guard Dog (Fall 2020) and Automatic Nurturing Terrarium (Spring 2021)
- Senior Design II Team: Quicket System (Spring 2021)
- President of the MSU Chapter of NSBE – Johnathan Cheeks, EE
- Energy Club Solar Decathlon Team Lead – Liam Nelson, EE
- BCOE Hall of Fame Inductees – Zoe Fowler, EE and Erin Parker, CPE
- NSF Graduate Research Fellowship Award winner – Zoe Fowler, EE
- Undergraduate Research Award – Erin Parker, CPE
- IEEE PES Scholarship – Jackson Mohundro, EE
- Mississippi Engineering Society Scholarship – Kaitlyn Jackson, EE
- IEEE Mississippi Young Professionals AG Excom Treasurer – Sydney Lee, EE
- Digital Devices Lab awards – Daegan Appel, CPE and Jonathan Windham, EE
- 186 ECE undergraduates were listed as President's and Deans' Scholars



**Congratulations to
Kylie on being a 2021
Zacharias
Distinguished Staff
Award recipient.**

Please be sure to follow ECE-MSU on your favorite social media outlet for regular updates throughout the Fall and Spring terms.

-Kylie Crosland, ECE Undergraduate Coordinator

Graduate Update

Spring 2021 was a very busy but fruitful semester. We had eight students graduate in May, who are Roshan Sharma, William Carroll, Timothy Foster, Samuel Mitchell, Preston Peranich, Mia Scheider, Logan Smith, and Nicholas Smith. We also launched the annual ECE graduate awards to recognize our outstanding graduate students. Moinul Haque and Dylan Boyd received the best graduate researcher award. Moinul's research is on degradation modeling and degradation-aware control of power electronic system, under the supervision of Dr. Seungdeog Choi. Dylan's research is on signals of opportunity (SoOp) modeling and retrieval, under the supervision of Dr. Mehmet Kurum. Dylan also received the Graduate Student Research Award from the Bagley College of Engineering. Congratulations to our graduates and awardees!

-Dr. Jenny Du, ECE Graduate Coordinator

**Congratulations to Dr. Du
on receiving the
Bagley College of Engineering
Career Award.**

May 2021 Graduation

Thesis/Dissertation List

PhD Dissertation by Roshan Sharma

Major Professor: Masoud Karimi

Applications of Battery Energy Storage to Mitigate Disturbances and Uncertainties in Power Systems with High Penetration of Renewable Energy Resources

MS Thesis by William Carroll

Major Professor: John Ball

Design and Validation of an Improved Wearable Foot-Ankle Motion Capture Device using Soft Robotic Sensors

MS Thesis by Timothy Foster

Major Professor: John Ball

Object Detection and Sensor Data Processing for Off-Road Autonomous Vehicles

MS Thesis by Preston Peranich

Major Professor: John Ball

Implementation of UAS-based P-band Signals of Opportunity Receiver for Root-zone Soil Moisture Retrieval

MS Thesis by Logan Smith

Major Professor: John Ball

Machine Learning for Wireless Signal Learning

MS Thesis by Mia Scheider

Major Professor: Mehmet Kurum

Automating Precision Drone Landing and Battery Exchange

MS Thesis by Nicholas Smith

Major Professor: Bo Tang

Radio Frequency Dataset Collection System Development for Location and Device Fingerprinting

Graduate Spotlight

Congratulations to Dylan Boyd on receiving the Bagley College of Engineering Graduate Student Research Award.

The award is designed to honor individuals who contribute a great amount to the University's mission of research. Each winner of the Graduate Student Research Award gives a presentation about their research.

Dylan's research topic is on Signals of Opportunity (SoOp) modeling and retrieval. If you are performing microwave remote sensing in space, there are only certain bands that are reserved for science. Generally, the longest wavelengths someone will see are around L-band (1.4 GHz or about 20 centimeters long). The goal is to recycle the signals from communication satellites so that new wavelengths can be used for remote sensing. There are some satellites that transmit at long wavelengths (80 to 220 centimeters), and by measuring the reflections of those satellite signals using a signal of opportunity receiver, someone might be able to improve soil moisture retrieval over areas with dense vegetation and high surface roughness.

Dylan Boyd is a Graduate student from Meridian, MS.



Undergraduate Spotlight

Congratulations to Zoe Fowler and Erin Parker on being inducted into the 2021 Bagley College of Engineering Student Hall of Fame.

Zoe and Erin are two of seven undergraduates inducted into the Mississippi State University's Bagley College Engineering Student Hall of fame. The Hall of Fame began in 2007. The purpose of this award is to spotlight students who go above and beyond. Such as academic achievement and leadership skills.

Zoe Fowler is a recent Spring 2021 graduate. Zoe majored in electrical engineering in the ECE Department. Zoe is also a member of Phi Kappa Phi, serves as an ECE Ambassador, recipient of the 2020 Astronaut Scholarship, and recently awarded a Graduate Fellowship from the National Science Foundation.



Erin Parker is a recent Spring 2021 graduate from the ECE Department. Erin majored in computer engineering and fashion merchandising. She is received the Most Innovative Cotton Performance Technology at the Cotton Incorporated AgChoice awards. Also, Erin is the co-author of three published journal articles. Recently, Erin was announced as the BCOE Undergraduate Research Award recipient.

Student Leadership Spotlight

Jonathan, a senior electrical engineering major, was recently selected as the President of the National Society of Black Engineers (NSBE). Jonathan said he began his journey at MSU as a software engineering student, but quickly decided he did not want to “be confined to computer screen.” “Electrical engineering provided the same job security with a more hands on approach. My interest evolved when I saw how electrical engineering could be a doorway to innumerable possibilities,” the Gluckstadt native said.

Leadership is something that Jonathan knew was going to be part of his journey. “I came to MSU with two main goals: to put myself in a position to be of service to others and to be an example to those following behind. Leading NSBE was the perfect way to achieve these goals.”

In addition to NSBE, Jonathan is also a member of IMAGE - a sister organization to NSBE, and SAAS, the Society of African American Studies.

-Carrie Black, Academic Coordinator



Alumni News

The ECE Department is excited to share two new awards recognizing ECE alumni. The department will now have an ECE Distinguished Alumni Award and an ECE Wall of Fame. These awards will recognize and give thanks to our alumni for their support of the ECE Department. Members of the Wall of Fame will be honored by having a plaque placed on a designated wall in the ECE Department; in addition, there will be a ceremony during the Fall semester to present the Distinguished Alumni Award and reveal the inductees to the ECE Wall of Fame.

2021 Distinguished Alumni Award Members

David Akers, William Ball, Bruce Deer

2021 ECE Wall of Fame Inductees

Cullis Wade, Wallace Hosmer, James Forbes, Jim Bagley, Jack Bradley, Ed Blakeslee, Drayton Boozer and John Noblin

The ECE department is highly active in autonomy research. Dr. John Ball's research team is collaborating with other ECE faculty to investigate autonomy, especially in unstructured environments. Tim Foster (Master's student) developed a lidar-camera fusion method for semantic segmentation (labeling each pixel in an image), Tashfin Iftexhar (PhD student) is researching deep learning-based localization in unstructured environments, Simegnev Alaba (PhD student) is researching lidar-camera fusion and Fahmida Islam (PhD student) is researching sensor fusion and optimal adaptive cruise control algorithms. In collaborations with Dr. Ali Gurbuz, Peyton Johnson (Master's student) and Sam McDevitt (Master's student) are researching estimation of vegetation density and camera-based semantic segmentation and Ben Bartlett (Master's student) is researching mm-wave radar systems for autonomous vehicle and human interaction. Finally, working with Dr. Bo Tang, Suvash Sharma (PhD student) has developed de-raining deep learning system (removes rain streaks from images) and semantic segmentation methods for cameras.



CONGRATULATIONS to the Electrical and Computer Engineering Faculty and Students on all of their achievements.

Please visit the ECE Department's webpage

to view all of the awards and achievements that our faculty and staff have received during the Spring 2021 semester. As well as, visiting our social media accounts for all awards and updates given throughout the ECE Department.



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<https://www.ece.msstate.edu/welcome/>



Jackson Mohundro receives an IEEE PES scholarship



Dr. Green and Dr. Iqbal receives the 2021 Outstanding Teaching Awards from NSBE and IMAGE.



Moinul Haque receives the ECE Best Graduate Researcher Award.



ECE teaching assistants who received high marks on their Fall 2020 student evaluations. (MM Nabi, Yadu Paudel, Timothy Sellers, And Zachary Warren)



Senior Design Team 1st Place: Quicket System (Drew Mohundro, Alex Bigej, Preston May, Carol Pollard, Garrett Smith)



Intro to ECE Design Team 1st Place: Automatic Nurturing Terrarium (Joseph Miller, Dylan Johnson, Han Berdiyev, Isaac Martinolich, Timothy Barnette)



ECE professors/instructors who received high marks on their Fall 2020 student evaluations. (Dr. John Ball, Dr. Seungdeog Choi, Dr. Ryan Green, Dr. Umar Iqbal, Dr. Bryan Jones, Dr. Masoud Karimi, Christopher Linton, Kirk Sharp, and Dr. David Wallace)

Electrical and Computer Engineering Advisory Board Members

Ken Buss. Joanie Campbell. Derrick Cherry. Bruce Deer. George Fisher. Kevin Heering. Greg Howell. Charlie Hudnall. Glenn Isom. Ivy Kelly. Don Kidd. Danny Merchant. Huey Ngo. Zak Phillips. Everette Ramage. Nashlie Sephus. Anthony Sones. Van Wardlaw. Terrance West. Al Williams. Shun Williams. Anthony Wilson. Nicolas Younan.

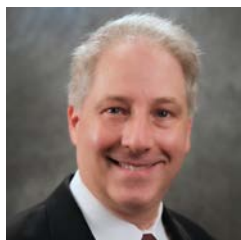
This Spring semester, the ECE Department started a new tradition: Challenge Coins. We are challenging our recent graduates to show gratitude to those that inspired them and helped them to get where they are, as well as to help encourage the next generation of engineers.



The ECE Department is delighted to share our Spring 2021 newsletter. The purpose of this newsletter is to showcase student, faculty, and alumni achievements. In addition, we hope to provide updates on our students throughout the semester. Anyone who has something that he/she would like to showcase in the newsletter, please contact Shelby Chaney, Editor in Chief, at shelby@ece.msstate.edu.

-Shelby Chaney, Administrative Assistant and EiC

ECE
FACULTY
and
STAFF



John Ball



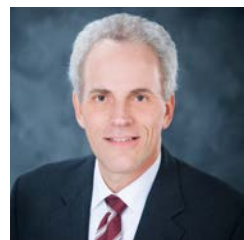
Seungdeog Choi



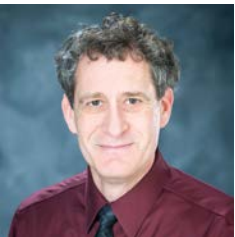
Pat Donohie



Jenny Du



Randy Follett



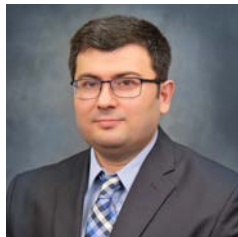
James Fowler



Yong Fu



Ryan Green



Ali Gurbuz



Umar Iqbal



Bryan Jones



Masoud Karimi



Samee Khan



Yaroslav Koshka



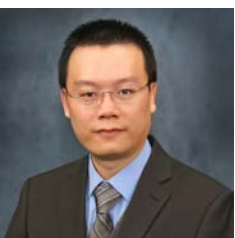
Mehmet Kurum



Chung-hung Liu



Chaomin Luo



Yu Luo



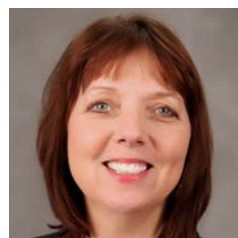
Vuk Marojevic



Khalid Miah



Jean Mohammadi-Aragh



Jane Moorhead



Robert Moorhead



Chanyeop Park



Bo Tang



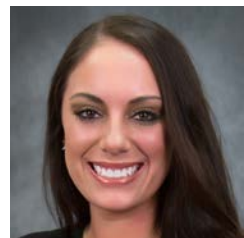
Junbo Zhao



Carrie Black



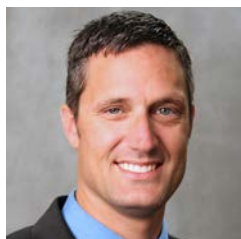
Jeannette Booth



Shelby Chaney



Kylie Crosland



Jeff Ellis



Ellen Harpole



Teresa Stewart



Josh Weaver



David Wallace

GIVING

Your giving helps the ECE Department to serve our students better. Donations help to enhance the quality of our academic and research programs. Your giving also allows ECE students to receive scholarships. We, the ECE Department, are grateful of your kind and generous support, and every donation is greatly appreciated!

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