

*Inclusive Innovation, Research & Training
For Future Electrical and Computer Engineers*

Electrical Engineering + Computer Engineering Academic Programs

The Electrical and Computer Engineering Department of the nation's only joint college leverages the strengths of both parent universities and the expertise and advanced research infrastructure of the affiliated research centers to perform cutting-edge research and shape the next generation of engineering innovators and leaders who thrive in the increasingly diverse engineering workforce.

We benefit from the unique partnership between Florida A&M University and Florida State University to immerse our graduate and undergraduate students in cutting-edge research and engineering education. Our world-renowned faculty is engaged in many large multi-university and multi-disciplinary research programs funded by NASA, the Department of Energy, the National Science Foundation, The Office of Naval Research and industry sponsors. The unrivaled research infrastructure available to our faculty at the FAMU-FSU College of Engineering, the Center for Advanced Power Systems and other affiliated centers offers our students top-quality research experience, innovation and collaborative R&D with industry.

Active Research Collaborations

- The Center for Advanced Power Systems (CAPS)
- The Electric Ship Research and Development Consortium (ESRDC)
- Integrated Zero-Emission Aviation (IZEA) using a Robust Hybrid Architecture (IZEA)
- CyberPREPS: Concurrent Learning Cyber-Physical Framework for Resilient Electric Power System
- ASTERIX - Advanced Sensors Technologies for Applications in Electrical Engineering - Research and Innovation Excellence Consortium, a DoE/NNSA - MSIPP funded program at FAMU
- ExpandQSE: Track 2: Developing Quantum Information Science and Engineering Research and Education Program at FAMU, funded by NSF

Degree Programs

B.S. Electrical Engineering
B.S. Computer Engineering
Bachelor of Science and Master of Science (B.S.-M.S.) pathway
M.S. (non-thesis) Electrical Engineering
M.S. Electrical Engineering
Ph.D. Electrical Engineering



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Electrical Engineering + Computer Engineering Faculty Awards

Manoj Shah – NAE Member and
IEEE Fellow

Longya Xu - NAE Member and
IEEE Fellow

Rajendra Arora - Fellow of the Institute
of Electronics and Telecommunication
Engineers (IETE)

Shonda Bernadin – Google Endowed
Professorship

Olugbenga (Moses) Anubi – U.S. DOT
Stage 1A Intersection Safety Challenge
Award and Senior Member, NAI

Society Fellows

Hui (Helen) Li – IEEE Fellow

Sastry Pamidi – Fellow of the Cryogenic
Society of America (CSA)

National Science Foundation (NSF) CAREER Awards

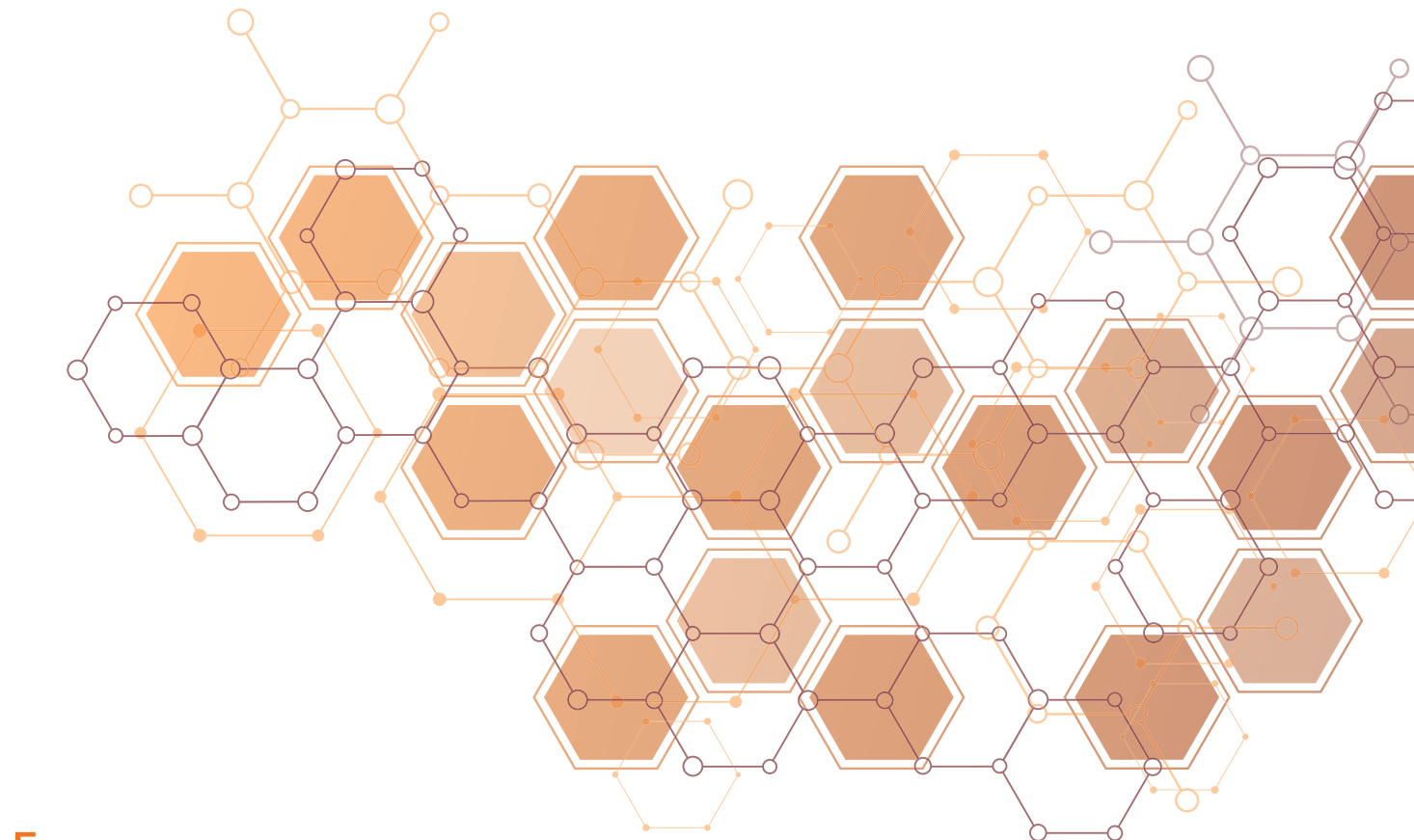
Bayaner Arigong – Early Career Award

Notable Alumni

Satish Dhanasekaran – CEO of
Keysight

Nathan Brooks, Ph.D. – Boeing Senior
Technical Fellow

Gregory Triplett, Ph.D. – Dean of Saint
Louis University's School of Science and
Engineering



One **college**,
two **universities**,
unlimited **opportunity**.

The FAMU-FSU College of Engineering is the joint engineering institution for Florida A&M and Florida State universities, the only such shared college in the nation. We are located less than three miles from each campus. After satisfying prerequisites at their home university, students learn together at the central engineering campus with its adjacent, associated research centers and a national laboratory.



FAMU-FSU
College of
Engineering

DEPARTMENT OF
**ELECTRICAL &
COMPUTER
ENGINEERING**



A Message from

Sastry Pamidi, Ph.D.
Chair, Department of
Electrical & Computer
Engineering

The Electrical and Computer Engineering Department contributes to the economic and social well-being of Floridians and citizens worldwide through high-quality education, cutting-edge research and professional service. We attract top students, recruit and retain distinguished faculty, and maintain a diverse research portfolio, securing multi-million-dollar grants from federal and state agencies and industry partners. To provide a comprehensive education, we continue to expand course offerings, laboratory facilities and hands-on learning opportunities.

Our graduates are highly sought after, receiving multiple job offers and advancing to leadership roles in tech companies, national labs and government agencies. They earn national research and leadership awards, present at prestigious conferences and are published in high-impact journals. Faculty members also receive national and international recognition, with honors such as membership in the National Academy of Engineering and Fellowships in IEEE and the Cryogenic Society of America. Many serve as editorial board members, conference chairs and leaders of major research consortia.

Research areas include power systems, renewable energy, energy conservation, cybersecurity, artificial intelligence, machine learning, autonomous systems, robotics, high-voltage engineering, superconducting power devices, high-speed circuits, secure communications, advanced digital circuits, speech processing and computer systems. The department offers paid research opportunities for high-achieving undergraduates and peer tutoring services for those needing extra support.

Our faculty members collaborate with industry and small businesses on technology and product development, supporting projects in electric aircraft, renewable energy systems and cyber-physical systems security. Our students benefit from these opportunities, with around 10% of undergraduates engaged in research.

Looking ahead, the department plans to increase faculty by 50%, establish a robust graduate program in computer engineering, grow graduate enrollment by 50%, involve 25% of undergraduates in research and boost external research spending by 20% over the next five years. We are up to the challenge.

Department of Electrical & Computer Engineering Annual Report 2024

*Innovating technological
advances while educating the
next generation of engineers*

Fall 2024

The Joint College by the Numbers

#60

Public Engineering
College with
Doctorate

(U.S. News & World Report 2024)

#49

Industrial & Manufacturing
Engineering Program Ranking

#54

Materials Science &
Engineering Program Ranking

#72

Civil & Environmental
Engineering Program Ranking

Electrical & Computer Engineering Research Laboratories at the Joint College

Center for Advanced Power Systems (CAPS)

The center advances power systems technology through multidisciplinary research with applications in electric utilities, defense and transportation. Key focus areas include power systems modeling, control systems, cybersecurity and high-temperature superconductors. Supported by the U.S. Navy and Department of Energy, CAPS operates a state-of-the-art test facility with a 5 MW AC/DC hardware-in-the-loop simulator, driven by an international team of researchers, faculty and industry experts committed to pioneering advancements in electric power systems.

Integrated Zero-Emission Aviation (IZEA) using a Robust Hybrid Architecture (IZEA)

This academic-industry collaboration aims to eliminate greenhouse gas emissions in commercial aviation by 2050 through hybrid hydrogen-electric propulsion systems. The project explores turboelectric generators and hydrogen fuel cells, supported by cryogenic technologies, for high-efficiency, zero-emission power. The research will establish system requirements for a scalable, hybrid wing-body aircraft and develop a testbed for real-world validation, leveraging advanced expertise in electric power, energy storage, propulsion and thermal management.

Center for Intelligent, Systems, Control and Robotics (CISCOR)

The lab uses state-of-the-art technology to develop practical solutions to problems in systems, control and robotics for applications in industry and government. Its multidisciplinary faculty comes from mechanical engineering, electrical and computer engineering, computer science and statistics and provides expertise in mechanical design, dynamic modeling, control, artificial intelligence, pattern recognition and computer vision.



Department by the Numbers (Fall '24)

494

Undergraduate
Students

99

Graduate
Students

1800⁺

Alumni

1:22

ECE Faculty-to-
Student Ratio

27

Total ECE Faculty

9

Number of New ECE
Faculty in Last 5 Years

Enrollment

17%

Female Students
in ECE

63%

URM Students
in ECE

14%

Increase in URM Enrollment
in ECE Over Past 5 years

32%

Increase in ECE Graduate
Enrollment Over Past 5 Years

Research

33

Number of Patents
Held by CEE Faculty

\$984K

Grants & Awards per
ECE Faculty Member

\$686K

Research Expenditure
per ECE Faculty Member

68%

Increase in Research
Expenditures Over
Past 5 Years

151%

Increase in Grants &
Awards Over Past 5 Years

Outcomes

\$138K

Average Salary for
Computer Engineer

\$125K

Average Salary for
Electrical Engineer

Building a Quantum Research and Education Hub

Bayaner Arigong recently secured one of two \$5 million NSF ExpandQISE grants, positioning the college for groundbreaking advancements in the quantum realm. His team will collaborate with other universities and private industry to develop quantum chips and training platforms to redefine quantum science. They are developing microwave quantum-integrated chips and mid-scale quantum systems with novel protocols and multifunctional processing capabilities for quantum sensing and securing artificial intelligence models. The project aims to create a quantum-savvy workforce through new courses, professional training and outreach, preparing joint college students to lead in QISE and STEM fields.



SIGNAL PROCESSING

Developing RF Processors Using Novel Materials

Bayaner Arigong received an NSF Early Career Award for his aim to design an RF real-time configurable analog signal co-processor using nanoparticles and 3-D printing. The process transmits signals in the analog domain before converting them to digital and accelerates computing speed. His research uses a phase-changing nanoparticle filling to control and conform to different sizes and shapes required for multiple mathematical operations. The complex calculations are used in everything from high-tech AI to wireless communications. The engineered nanoparticle composite film and 3-D printing techniques reduce the cost of fabrication and design. His design speeds up signal processing while lowering the cost and complexity by using less energy.

CYBERSECURITY

Improving Electric Grid Cybersecurity

Assistant Professor **Olugbenga Moses Anubi's** CyberPREPS project aims to secure electric power systems against cyberattacks by employing advanced machine learning algorithms that utilize operational data and secondary information sources. Supported by a \$2.89 million grant from the U.S. Department of Energy, this approach mimics the immune system's response, allowing the grid to adapt and maintain function during attacks. The project will leverage the Center for Advanced Power Systems' testing facilities to enhance grid resilience and address growing cybersecurity threats.

SAFETY TECHNOLOGY

Improving Intersection Safety

The PREDISS project, led by professors **Olugbenga Anubi** and **Ren Moses** with **Joshua Hollingsworth**, aims to enhance intersection safety using predictive technology. By integrating low-cost sensors, cameras and V2X technology, PREDISS tracks vehicles and pedestrians, predicts potential collisions and sends real-time alerts or adjusts traffic signals to prevent accidents. The team is advancing this system for Tallahassee, focusing on protecting vulnerable road users. The project aligns with USDOT's national safety goals and involves hands-on development for students in the Resilient and Autonomous Systems Lab.

FACULTY ACHIEVEMENTS

Google Endowed Professorship Awarded to Electrical Engineer

Shonda Bernadin is one of the first Google Endowed Professors at Florida A&M University. Supported by a \$5 million Google grant, her work bridges computer engineering and computer science, focusing on speech processing, data analysis and AI. Bernadin founded the SPADAL lab and promotes STEM education for underserved communities, receiving several awards for her efforts. She also advises the WISTEM and NSBE Pre-Collegiate chapters and serves on the STEM4Girls board.

ELECTRIC VEHICLES

Improving Electric Vehicle Technology with New Power Train Innovation

Researchers **Jinyeong Moon** (FAMU-FSU College of Engineering) and **Woongkul Lee** (Michigan State University), funded by the Department of Energy and General Motors, are advancing electric vehicle technology with a new three-level inverter that offers smoother power delivery, enhanced efficiency and reduced cost. This innovative design decreases physical volume and improves motor performance by eliminating the need for a neutral clamp and integrating Gallium Nitride transistors. This collaboration, with partners including NexGen and NREL, aims to propel EV reliability and accessibility.

DISTINGUISHED FACULTY HIRE

Noted Inventor, National Academy Member Hired as Distinguished Professor

Manoj Shah, a distinguished engineer and National Academy of Engineering member, recently joined the ECE faculty as a Distinguished Professor of Engineering. With over 34 years at General Electric, Shah will leverage his expertise in electric machinery to foster industry partnerships and introduce new courses. His contributions include over 90 patents, numerous technical publications and prestigious awards such as the IEEE Nikola Tesla Award. Dean Suvranu De emphasized Shah's impact on advancing the college's educational and research goals.

Dive deeper: famufsu.engineer/ECE



Olugbenga (Moses) Anubi

Assistant Professor of Electrical
& Computer Engineering

"My research utilizes control theory and machine learning to enhance safety and resilience in cyber-physical systems, aiming to advance the efficiency, resilience and safety of critical infrastructures in energy and transportation."

Read more about his work:

