

# CHARGE

**TO EMPOWER AND SERVE**

THE MAGAZINE OF THE UCF DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

FALL 2024



**FUTURE  
Ready**

**UCF INTRODUCES DEGREE IN ROBOTICS**



**UCF**

# TABLE OF CONTENTS



- 3 A Message from the Chair,  
By the Numbers
- 4 Mastering Autonomous Systems
- 6 Training Technology
- 8 Magnetic Marvel
- 10 Cyberattack Defender
- 11 Supporting Space Missions
- 12 Meeting Workforce Demand
- 14 Making Wireless Deep Smart
- 15 Onward and Upward
- 16 Making an Impact
- 18 Celebrating Faculty Excellence
- 19 Supporting STEM Scholars
- 20 From Ph.D. to Professor
- 22 A Shared Vision



*CHARGED* is a publication of the University of Central Florida Department of Electrical and Computer Engineering that showcases the accomplishments and accolades of its students, faculty and alumni.

## UCF COLLEGE OF ENGINEERING AND COMPUTER SCIENCE DEAN

Michael Georgiopoulos, Ph.D.

## DEPARTMENT CHAIR

Reza Abdolvand, Ph.D.

## MARKETING COMMUNICATIONS SPECIALIST

Bel Huston

## UCF DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

4328 Scorpius St.

Orlando, Florida 32816-2362

[ece.ucf.edu](http://ece.ucf.edu)

## CONNECT WITH US ON SOCIAL



# A MESSAGE FROM THE CHAIR

Welcome to the 2024 edition of *CHARGED*, the magazine of UCF's Department of Electrical and Computer Engineering!

The past year has been transformative for ECE at UCF. This fall, we welcomed our first cohort of students into the new master's degree in robotics and autonomous systems. Additionally, we introduced a new undergraduate certificate in semiconductor manufacturing, and in collaboration with NASA, we are now offering a graduate certificate in electronic parts engineering. These programs reflect our unwavering commitment to preparing students for the demands of an ever-evolving technological landscape.

Our department has also continued its unprecedented growth, with nine new faculty members joining our ranks this year — seven of whom are already with us, while two will arrive in Spring 2025. This brings the total number of new faculty to 21 in just two years, marking more than 50% growth. This expansion is essential as we strive to meet the workforce needs of key sectors such as semiconductors, energy, AI and space technologies.

Our graduate programs have also garnered

national recognition, with both our electrical engineering and computer engineering programs climbing in the *U.S. News & World Report* rankings. Computer engineering now stands at 50th, while electrical engineering has risen to 53rd. These achievements underscore the collective efforts of our faculty, staff and students.

We are proud of our strong connections with industry leaders, including partnerships with companies such as AMD, Northrup Grumman, Lockheed Martin, Intel and Texas Instruments. These collaborations provide our students with invaluable scholarships, hands-on research opportunities and pathways to meaningful careers.

As you explore this edition of *CHARGED*, you'll see the incredible achievements of our faculty and students. Their cutting-edge research, innovative thinking and commitment to service are at the heart of everything we do.



## Reza Abdolvand

Professor and Chair  
UCF Department of Electrical  
and Computer Engineering

## By the Numbers



**GRADUATE PROGRAM RANKINGS**  
*U.S. News & World Report*

**No. 50** COMPUTER ENGINEERING

**No. 53** ELECTRICAL ENGINEERING



**54** FACULTY MEMBERS



2023-2024  
**DEGREES AWARDED**

	BS	MS	PH.D.
COMPUTER ENGINEERING	120	10	5
ELECTRICAL ENGINEERING	145	15	14



Fall 2024  
**STUDENT ENROLLMENT**

	BS	MS	PH.D.
COMPUTER ENGINEERING	512	76	49
ELECTRICAL ENGINEERING	463	57	92



2023-2024  
**RESEARCH FUNDING**  
**\$13.3M**



**FACULTY HONORS**

- 1** NAE MEMBER
- 2** ECS FELLOWS
- 7** IEEE FELLOWS
- 8** AAAS FELLOWS



# MASTERING Autonomous SYSTEMS

UCF'S NEW MASTER'S DEGREE CREATES PATHWAY TO CAREERS IN ROBOTICS

BY MARISA RAMICCIO

TapeMeasure, UCF's robotic dog used by students for research, became an instant sensation during the 2023 Space Game at FBC Mortgage Stadium, captivating the crowd as soon as it stepped onto the field. Photos and videos of the four-legged machine flooded social media, and several media outlets

are used in society. This includes self-driving cars, drones, medical robots — and even mechanical dogs. The curriculum will cover multiple disciplines with a focus on electrical and electronic hardware, machine learning, autonomous control and computer vision.

“Robotics is a very

medical robotics and intelligent systems. The skills they develop can be applied to an independent study project, a master's thesis or robotics research in a related laboratory or center. With the skills and experience gained from the program, students can establish careers as robotics engineers across a variety of industries.

“We hope the program helps local companies with their workforce needs,” Sukthankar says. “Central Florida is home to several companies that have large

## “CENTRAL FLORIDA IS HOME TO SEVERAL COMPANIES THAT HAVE LARGE ROBOTICS INVESTMENTS, INCLUDING LOCKHEED MARTIN, L3HARRIS AND SIEMENS.

featured it in their newscasts.

Now students with a passion for robotics can take their interest and their education to a new level. The College of Engineering and Computer Science has launched a master's in robotics and autonomous systems within the Department of Electrical and Computer Engineering (ECE).

“ECE has recognized robotics as a key area for growth and is committed to expanding educational and training opportunities that prepare UCF students for the future workforce, where intelligent machines are expected to play an increasingly pivotal role,” says ECE Department Chair Reza Abdolvand. “The program is designed to not only benefit students, but the local workforce as well.”

Students who enroll in the program will learn to analyze, design and develop the robotics and autonomous systems that

interdisciplinary field and UCF's program ensures that students are exposed to courses from multiple engineering specialties,” says UCF Computer Science Professor Gita Sukthankar. “The master of science in robotics and autonomous systems is housed within the Department of Electrical and Computer Engineering, but it also includes required courses from mechanical engineering and computer science.”

While other graduate level programs in Florida offer specializations related to robotics, none are as comprehensive or immersive as this master's degree, Sukthankar says. Students who enroll can take courses in computer vision, machine learning, autonomous vehicles,



Graduate and undergraduate students in the ECE LIMB Lab

robotics investments, including Lockheed Martin, L3Harris and Siemens. We also hope that some of our graduates choose to start companies of their own since this area is ripe for venture capital investment.”

*For more information about ECE's new master's degree, contact Professor Yaser Fallah, program coordinator: [Yaser.Fallah@ucf.edu](mailto:Yaser.Fallah@ucf.edu)*



# Training

# TECHNOLOGY

## UCF RESEARCHERS RECEIVE \$1.2M DARPA GRANT TO IMPROVE AUTONOMOUS SYSTEMS TRAINING

BY MARISA RAMICCIO

Autonomous systems, such as self-driving cars and unmanned aircraft, learn from modeling and simulation. However, the training process can take months to years, and it doesn't account for the uncertainty found in the real world. In the world of robotics, this is known as the simulation-to-real gap.

To improve this gap, the Defense Advanced Research Projects Agency (DARPA) has implemented the Transfer Learning from Imprecise and Abstract Models to Autonomous Technologies (TIAMAT) program, which recently awarded a \$1.2 million grant to UCF researchers George Atia and Yue Wang. Their project is titled "Distributionally Robust Approaches to Transfer Learning."

"Being selected for this award from DARPA is truly an honor," says Atia, a professor in the Department of Electrical and Computer

Engineering. “I’m thrilled to have the opportunity to participate in the TIAMAT program. This recognition is especially meaningful given the competitive nature of the funding environment.”

Over the next 18 months, Atia

abilities to handle surprises, enabling quicker learning and better performance. By bridging theory with practical application, we aim to improve knowledge transfer effectiveness, particularly in scenarios with limited real-world data.”

industries.

“In healthcare, for instance, our robust knowledge transfer methods could facilitate the transfer of treatment plans between patients, improving personalized care,” Atia says. “Likewise, decision-making policies tailored for specific road conditions could be repurposed for other environments, enhancing safety and efficiency in autonomous driving. By addressing the limitations of traditional machine learning methods, our research has the potential to revolutionize various industries and enable transformative approaches to complex problems.”

## “OUR RESEARCH HAS THE POTENTIAL TO REVOLUTIONIZE VARIOUS INDUSTRIES AND ENABLE TRANSFORMATIVE APPROACHES TO COMPLEX PROBLEMS.”

and Wang will develop artificial intelligence-based technologies that can help autonomous systems better adapt to unknown variables. Current simulation environments may be very complex and realistic, but they don’t account for the unexpected. For example, a drone flying from a city to a coast may not know how to cope with changes in flight dynamics or lighting.

Speed is another issue to overcome. It can take millions of simulated episodes, spanning the course of several years, for an autonomous system to be trained well for real-world platforms. The UCF team plans to mitigate both factors by designing technology that can train quickly and efficiently.

“Imagine teaching a robot to navigate a bustling city street after mastering a simple maze,” Atia says. “Most methods either ignore uncertainties or play it too safe. But our approach would equip the robot with special

While defense agencies like DARPA have a particular interest in autonomous systems that can handle the unexpected, the technology can span across



*Yue Wang and George Atia*

# Magnetic

# MARVEL

## UCF ASSISTANT PROFESSOR'S MAGNETIC LEVITATION SYSTEM COULD HELP IMPROVE THE PERFORMANCE OF INERTIA SENSORS

BY EDDY DURYEVA

UCF and the University of Florida are receiving \$1.2 million over two years from the Defense Advanced Research Projects Agency (DARPA) to develop a miniature system capable of levitating a large mass with exceptional stability.

The funding comes from DARPA's Trapped Accurate microSystems (LeviTAS) program, which aims to explore the feasibility of replacing a spring anchor with a levitation system to trap a mass roughly the size of a sugar cube within a volume about the size of a Rubik's cube for use in defense systems.

The specific project awarded to UCF and UF

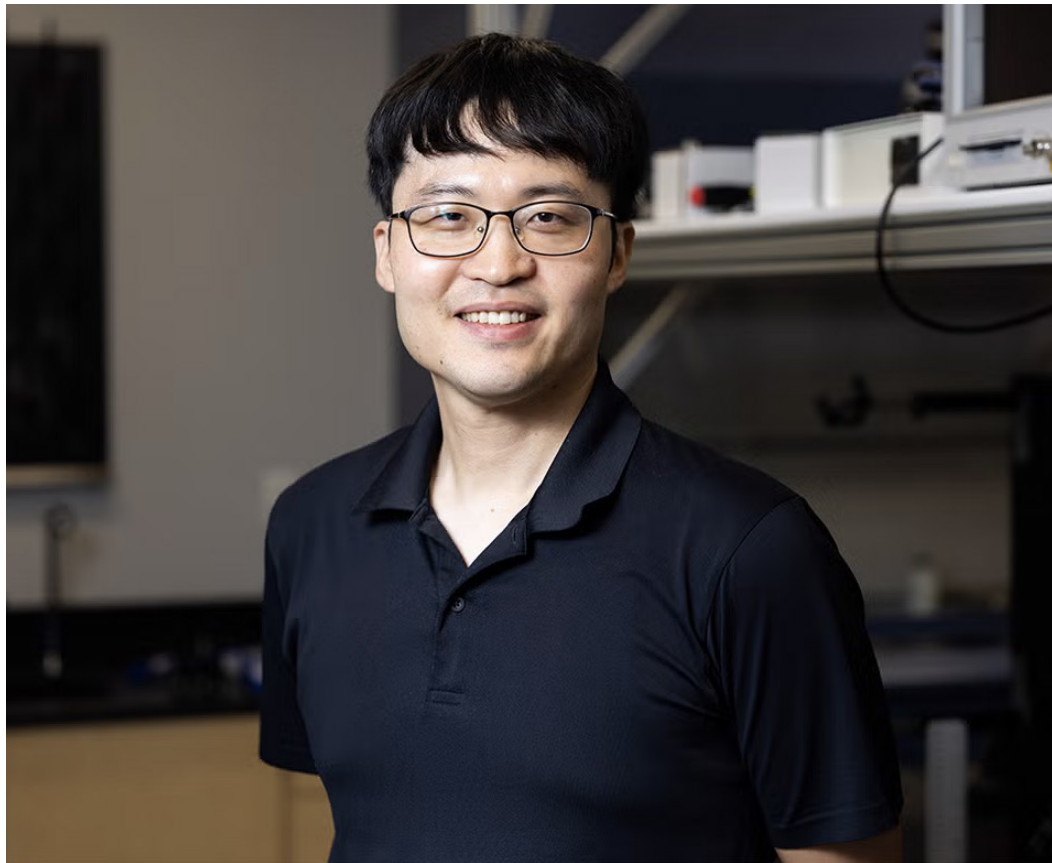


is called Full Levitation In MAgnetically Stabilized Systems (FLi-MaSS), and is one of eight teams selected as part of DARPA's LeviTAS program.

Jaesung Lee, an assistant professor in UCF's Department of Electrical and Computer Engineering, and Philip Feng, a professor in UF's Department of Electrical and Computer Engineering and graduate faculty Department of Physics, are collaborating on the project.

Through their FLi-MaSS project, Lee and Feng are hoping to transform levitated systems by achieving unprecedented stability and performance metrics crucial for next-generation navigation sensors that may be applied for defense and civilian uses.

The team plans to achieve this through diamagnetic levitation or a "hovering" effect. Diamagnetic materials are materials that are repelled and stabilized by a magnetic field.



and other applications," says Lee. "The project may enable a significant move forward in the realization of stable levitation systems and unlocks new possibilities in high-performance inertial sensor technology."

Inertial sensors can measure

work is to expand the application of their levitation technology beyond the performance of current inertial sensors. Lee and Feng plan to explore its potential in other fields such as precision measurement systems, quantum engineering and advanced communication technologies.

Additionally, they aim to refine the system for improved scalability and integration into commercial and industrial products with low size, weight and power consumption requirements for potential use in sensors.

By advancing the fundamental understanding and practical implementation of levitation systems through FLi-MaSS research, the researchers say they hope to pave the way for new innovations in various high-tech industries.

various parameters of a moving object including velocity, acceleration, orientation and gravitational forces. They're commonly used in military applications as well as in smartphones, automobiles and airplanes.

The team's vision for future

**“ THE PROJECT MAY ENABLE A SIGNIFICANT MOVE FORWARD IN THE REALIZATION OF STABLE LEVITATION SYSTEMS AND UNLOCKS NEW POSSIBILITIES IN HIGH-PERFORMANCE INERTIAL SENSOR TECHNOLOGY.**

Lee and Feng will also experiment using a diverse set of materials and technologies to engineer and maintain the levitation system.

"We aim to establish FLi-MaSS as an innovative solution with implications for inertial sensing for the Department of Defense

# Cyberattack

# DEFENDER

## UCF RESEARCHER TO INVESTIGATE MICROARCHITECTURAL ATTACKS THROUGH NSF CAREER AWARD

BY MARISA RAMICCIO

The websites you frequently visit and the software programs you use could leave behind clues that make your computer vulnerable to a cyberthreat known as a microarchitectural attack. But one UCF researcher is investigating the cause of these attacks, and discovering ways to prevent them, through a \$550,000 grant from the National Science Foundation.

Assistant Professor Fan Yao of the Department of Electrical and Computer Engineering has been awarded funding through the NSF Faculty Early Career Development Program (CAREER).

“This recognition not only reflects the potential of our research but also highlights the supportive environment at UCF that has allowed our ideas to flourish,” Yao says. “I am deeply grateful for this opportunity

and excited about the doors it opens for further exploration and contribution in our field.”

Microarchitectural attacks exploit the way that a computer processes and stores information to gain access to personal data.

**“ THIS RECOGNITION NOT ONLY REFLECTS THE POTENTIAL OF OUR RESEARCH BUT ALSO HIGHLIGHTS THE SUPPORTIVE ENVIRONMENT AT UCF THAT HAS ALLOWED OUR IDEAS TO FLOURISH.**



“These attacks pose a particularly grave threat because they can potentially exfiltrate all types of data from a victim’s computing system,” Yao says. “This includes sensitive information like banking details, password credentials and personal documents, including photos. Moreover, these attacks could be used to eavesdrop on users — for example, by monitoring which websites a user

is accessing at specific times.”

Computers aren’t the only devices susceptible to these attacks. Laptops, mobile phones and tablets can also be hacked. Yao advises users to only download apps from reputable

sources and frequently install microcode updates that can fix hardware-level issues.

Yao and his team of researchers aim to better understand how these crimes occur and find solutions to mitigate them. Their goal is to identify new vulnerabilities, create a comprehensive strategy to prevent information leaks and to enhance the security of modern-day computer systems.

# Supporting Space MISSIONS

## UCF PARTNERS WITH NASA ON NEW ENGINEERING GRADUATE CERTIFICATE

UCF is the only university in Florida collaborating with NASA on a unique certificate program, which will train students to evaluate and test the electrical and electronic components of devices and equipment used in space.

The program allows engineering students to gain real-world experience while meeting the needs of the industry. Starting Fall 2024, students can enroll in the graduate certificate in electronic parts engineering, offered through the Department of Electrical and Computer Engineering in partnership with the NASA Electronic Parts and Packaging Program.

The certificate program will train students to evaluate and test the electrical and electronic components of devices and equipment used in the harsh environment of space. UCF is one of three universities — and the only university in Florida — to partner with NASA on the program.

“In alignment with UCF’s vision as [America’s] Space University and in response to the demands of prominent local industries, the Department of Electrical and Computer Engineering is

prioritizing space electronics as a key focus in both student training and research initiatives,” says Reza Abdolvand, chair of the department.

Through their coursework, students will learn to establish test plans, conduct failure analysis and evaluate test results for usage. Then they can take what they’ve learned in the classroom and apply it to real-world research through paid internships at NASA’s Jet Propulsion Laboratory and the NASA Goddard Space Flight Center.

“This program will uniquely position students for internships and careers at NASA and, more generally, the aerospace and defense sector in both Florida and across the U.S.,” says Assistant Professor Enxia Zhang, coordinator of the certificate program.

Employment of electrical and electronics engineers is projected to grow over the next decade, according to the U.S. Bureau of Labor Statistics, and Florida is among the states boasting top employment for this profession.



Enxia Zhang and undergraduate student Michael Franz

# Meeting Workforce DEMAND

## UCF OFFERS CERTIFICATE IN SEMICONDUCTOR MANUFACTURING

BY BEL HUSTON

A new undergraduate certificate in semiconductor manufacturing from the UCF Department of Electrical and Computer Engineering aims to address the critical need for specialized training in this field.

The Semiconductor Engineering and Manufacturing Instruction (SEMI) certificate, available this fall, is designed for students interested in one of the most ubiquitous yet hidden elements in all the electronics and smart devices we use daily: semiconductor chips. From mobile phones and appliances to security systems and satellites, semiconductors power our digital world.

“The certificate was designed to create a path for students who want to gain entry-level knowledge of the fundamental science and engineering concepts behind the fabrication of semiconductor devices,” says Program Coordinator Ashley Duprat.

As technology advances, the need for semiconductor devices and systems continues to grow. Semiconductor manufacturing is forecasted to become a \$1 trillion industry by 2030, according to research firm McKinsey & Company, driven largely by the demand in automotive, computation and data storage, and wireless industries.

However, this booming industry faces a significant challenge: the need for a skilled workforce to support it. Although the demand for technology is expected to persist, the personnel required to sustain it are in short supply — the Semiconductor Industry Association predicts a shortfall of 67,000 workers by 2030.

In response to this critical need, the CHIPS Act was enacted in 2022. This legislation, formally known as the Creating Helpful Incentives to Produce Semiconductors Act, aims to bring more chip manufacturing stateside and decrease the nation’s reliance on overseas suppliers. The act allocated \$52.7 billion to support semiconductor manufacturing, incentivizing more U.S. companies to invest in this industry.

The growing demand for semiconductors, combined with a shortage of skilled workers and governmental support, creates a field brimming with opportunity.

“As the demand for skilled professionals in the industry continues to grow, we recognize the importance of providing our students with specialized training and hands-on experience in this field,” says Duprat. “The SEMI certificate will offer UCF students



*Undergraduate students receive hands-on semiconductor training at the SMART Workshop*

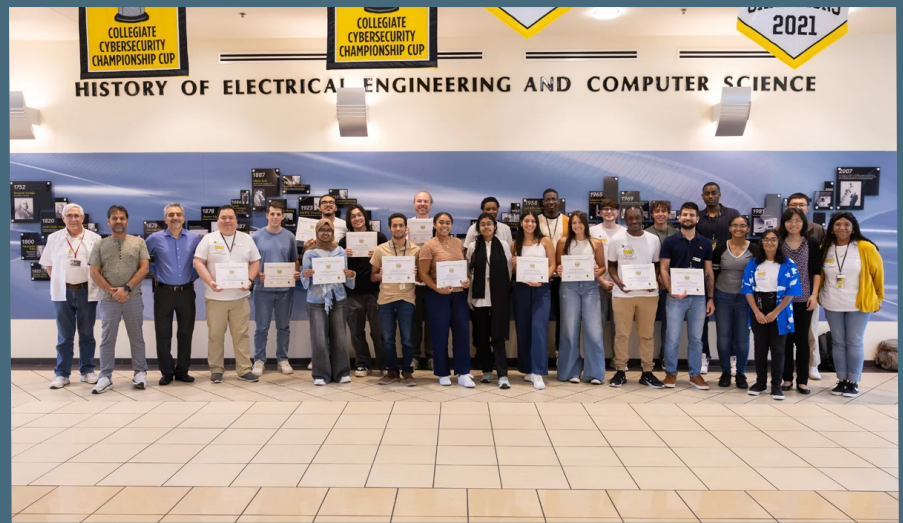
an opportunity to better market their skills and gain a competitive advantage.”

Students pursuing the certificate can apply the required courses toward their bachelor's degree. The curriculum spans multiple disciplines, including courses from the Department of Materials Science and Engineering, the Department of Mechanical and Aerospace Engineering, and the Department of Industrial Engineering and Management Systems.

This foundational training opens the door to numerous career paths. From researchers studying the materials used in semiconductors to engineers and technicians designing, testing and bringing these devices to market, the industry offers a variety of roles for new graduates.

The SEMI certificate also helps students meet the experience requirements often sought by employers, giving them a competitive edge in their job search. Duprat emphasizes that students who complete the certificate will be well-prepared for industry roles.

“One of the biggest benefits the SEMI certificate program offers students is job-readiness training,” she says. “The program is designed to equip students with the knowledge, skills, and practical experience needed to excel in semiconductor engineering and manufacturing roles.”



## STUDENTS AND FACULTY ADVANCE THEIR SEMICONDUCTOR KNOWLEDGE AT UCF SUMMER WORKSHOP

A group of 12 UCF students and faculty enriched their understanding of semiconductor manufacturing through the Semiconductor Manufacturing and Advances in Recent Technologies (SMART) workshop that took place in July.

The two-week program, sponsored by Intel and hosted by UCF's College of Engineering and Computer Science, exposed students and local educators to the field of semiconductor manufacturing through a series of comprehensive and hands-on experiences.

Semiconductor chips manipulate and store electromagnetic energy, making them essential components in electronics such as computers, medical devices and smartphones.

Intel supported the workshops financially and through its Intel Scholars program at UCF, which offers undergraduates interested in semiconductor manufacturing paid internships and opportunities to work in UCF's cleanrooms.

Intel scholars and faculty guided the participants through four separate modules that included the history of semiconductor electronics, the CHIPS and Science Act, semiconductor materials and a thorough look at the fabrication process.

There is a great need to prepare the emerging national workforce to meet the growing domestic and international demand for semiconductors, says Reza Abdolvand, UCF professor and chair of the UCF Department of Electrical and Computer Engineering and SMART workshop coordinator.

“We have identified a gap in training that is not unique to UCF,” he says. “It's across all educational institutions in the U.S. and that gap is training in semiconductor manufacturing. Institutions, including UCF, are trying to help the industry by creating workforce development programs that focus on this demand.”

Learn more from the SMART Workshop video:  
<https://bit.ly/3C4qJax>

# Making Wireless

# DEEP SMART

## UCF RESEARCHERS EXPLORE INTELLIGENT SHARING OF RADIO SPECTRUM

BY EDDY DURYE A

Communicating unimpeded at distances near and far is a dream Murat Yuksel is hoping to realize.

His ongoing research, titled “INWADE: INtelligent Waveform Adaptation with DEep Learning,” and funded by the U.S. Air Force Research, aims to get us closer to that dream by improving the quality of high frequency wireless signals using machine learning to fine-tune the networks’ efficacy.

The need to efficiently improve wireless signal quality will grow with the continuing proliferation of wireless networks for use in

communications, says Yuksel, a UCF Department of Electrical and Computer Engineering professor.

“The emerging 5G-and-beyond wireless networks regularly use high frequency signals above 6 GHz that are very sensitive to the environment,” he says. “They are more directional, get blocked easily, or attenuate quickly. Even the nature of the particles in the air affects them significantly. Deep learning enables us to learn the features of the environment. Hence, using these learned features enables us to better tune the wireless signals to attain

higher data transfer rates.”

INWADE is an automated means to design multiple communication blocks at the transmitter and the receiver jointly by training them as a combination of deep neural networks, benefitting wireless network users.

The development and study of the INWADE network was catalyzed by the need to keep pace with the spread and usage of wireless networks.

“Demand for wireless data transfers (such as cellular and Wi-Fi) is ever-increasing and this causes more tussle on the sharing of the underlying natural resource, which is the radio spectrum that supports these wireless transfers,” Yuksel says.

Yuksel is optimistic that his research will further benefit the greater scientific endeavor of making wireless networks accessible for all.

“The potential for this effort is huge,” he says. “I consider the radio spectrum to be a critical natural resource, like water or clean air. As machine learning methods are advancing, being able to use them for better sharing the spectrum and solving critical wireless challenges is very much needed.”



From left to right: Mustafa Tarik Sanic, Marc Henri Jean and Murat Yuksel

# Onward and UPWARD

## UCF GRADUATE PROGRAMS CLIMB IN THE U.S. NEWS RANKINGS

BY MARISA RAMICCIO

The UCF College of Engineering and Computer Science has ranked within the top 75 colleges and universities in the country on the *U.S. News and World Report* list of Best Engineering Schools for the eighth consecutive year. CECS is listed at No. 73 this year, and ranks at No. 45 among public universities and No. 2 in the State of Florida.

Ten of the college's graduate programs also ranked on the *U.S. News and World Report* lists this year.

The Department of Electrical and Computer Engineering takes its tagline, "Charged to Empower and Serve," seriously. Over the past year, the department has developed a number of fellowship and scholarship opportunities for students, and implemented several groundbreaking research projects, including Assistant Professor Kenle Chen's efforts to make wireless communication more energy efficient.

The hard work of the faculty, students and alumni has paid off as the electrical engineering and computer engineering graduate programs both jumped in the *U.S. News and World Report* rankings. Computer engineering climbed

seven spots, from No. 57 to No. 50, while electrical engineering rose five spots, from No. 58 to No. 53. Out of public schools in the U.S., computer engineering ranks at No. 27 while electrical engineering ranks at No. 29.

"The electrical and computer engineering department is steadfast in its commitment to excellence, with a sharp focus on enhancing the experiences of our students and industrial partners," says Professor Reza

Abdolvand, the department chair. "Their satisfaction fuels our passion and drives us forward. It's incredibly gratifying to receive acknowledgment from our peers, affirming that we are on the right path. Congratulations to our dedicated faculty and staff for this well-deserved recognition. Our heartfelt thanks go to the college and university leadership, whose support is crucial as we strive toward our noble goals."



Wei Sun with his graduate students in the Siemens Digital Grid Lab

# Making an IMPACT

## NEW FACULTY AUGMENT EXPERTISE IN EMERGING RESEARCH FIELDS

The UCF College of Engineering and Computer Science is making an impact in areas such as hypersonic technology, nanomedicine and biomedical engineering, and robotics and autonomous systems — and has hired a new group of faculty to enhance its reputation in these fields.

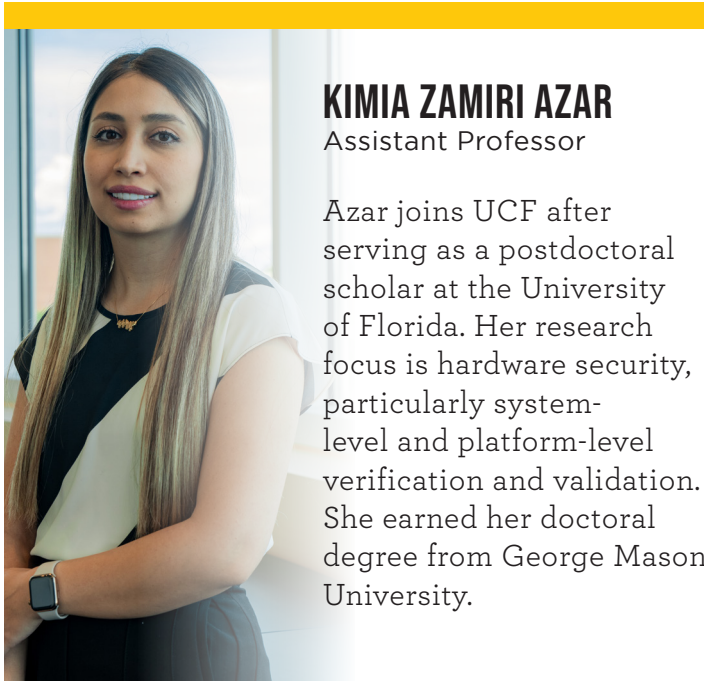
Seventeen new faculty members joined four of the six departments for Fall 2024. They bring an expertise in areas such as biomedicine, nanomaterials and optoelectronics. The addition of this group follows the hiring of more than 30 faculty members during the past academic year, reflecting the college's goals of providing quality education and producing innovative research.

The Department of Electrical and Computer Engineering welcomed seven of the new faculty members, further solidifying its position as a leader in areas like computer hardware, power systems and quantum technologies.



**MASOUMEH KALANTARI-KHANDANI**  
Lecturer

Kalantari is a graduate of the computer science doctoral program at UCF and earned her master's degree at Simon Fraser University in Canada. She completed a postdoctoral fellowship from the American Society of Engineering Education, sponsored by the National Science Foundation.



**KIMIA ZAMIRI AZAR**  
Assistant Professor

Azar joins UCF after serving as a postdoctoral scholar at the University of Florida. Her research focus is hardware security, particularly system-level and platform-level verification and validation. She earned her doctoral degree from George Mason University.



**TRUONG NGHIEM**  
Associate Professor

Nghiem was previously an associate professor at Northern Arizona University. He is a recipient of the National Science Foundation (NSF) CAREER Award and the NSF Engineering Research Initiation Award. He earned his doctoral degree in electrical and systems engineering from the University of Pennsylvania.



**WAYESH QARONY**  
Assistant Professor

Qarony comes to UCF from the University of California, Berkeley, and the Lawrence Berkeley National Laboratory, where he completed a joint postdoctoral fellowship. He earned his doctoral degree in applied physics from Hong Kong Polytechnic University.



**ARTHUR WEEKS**  
Senior Lecturer

Weeks, a three-time UCF alumnus, spent 35 years teaching within the Department of Electrical and Computer Engineering. He retired as a professor emeritus in 2022 and earned his tenure as an associate professor. During his time at UCF, he earned more than \$3.5 million in funding for his research.



**I WAS EAGER TO JOIN UCF BECAUSE OF ITS RENOWNED POWER AND ENERGY RESEARCH, PARTICULARLY THROUGH INITIATIVES LIKE THE RISES FACULTY CLUSTER. I AM EAGER TO CONTRIBUTE TO THE RESEARCH AND TEACHING IN INTELLIGENT AND RESILIENT ENERGY SYSTEMS USING MY KNOWLEDGE IN PHYSICS-AWARE AI. — Assistant Professor Tong Wu**



**TONG WU**  
Assistant Professor

Wu joins UCF from Cornell University, where he's served as a postdoctoral scholar since 2021. He earned his doctoral degree in information engineering from the Chinese University of Hong Kong. He says he was drawn to UCF because of its growing reputation in energy research.



**QICHEN YANG**  
Assistant Professor

Yang oversees the Power Electronics and Insulation Technology Lab. He previously worked as a research faculty member and a postdoctoral scholar at the Center for Advanced Power Systems at Florida State University. He earned his doctoral degree from the Georgia Institute of Technology in 2018.

# Celebrating Faculty **EXCELLENCE**

## UCF AWARDS THREE ECE FACULTY WITH PROMOTION AND TENURE

BY JOE ADAMS



**George Atia**



**Kenle Chen**



**Fan Yao**

UCF faculty members across the university, including several from the College of Engineering and Computer Science, achieved significant career milestones in earning promotions and tenure for the 2023-24 cycle. The 104 approved faculty — 63 for promotion, 40 for promotion and tenure and one for tenure — underwent a rigorous performance evaluation by peers, college and university leaders that took nearly an academic year.

George Atia was promoted to professor. Kenle Chen and Fan Yao were promoted to associate professors with tenure.

The president and provost make final decisions on promotions following reviews and recommendations from individual colleges and units. The UCF Board of Trustees must approve tenure, which is a

key factor in fulfilling UCF's strategic plan of becoming a preeminent state university, a national top 25 public institution and the world's leading public metropolitan research university. Aside from helping UCF recruit and retain exceptional faculty, tenure helps protect academic freedom and encourages faculty to focus on challenging and important problems to benefit society.

"These faculty members who earned promotion and tenure met a lofty and demanding bar in demonstrating excellence and high productivity over several years in teaching, research, and service," says Michael D. Johnson, UCF's provost and executive vice president for Academic Affairs. "I am confident this group will make a significant contribution to UCF's future success."

# Supporting STEM

# SCHOLARS

## NEW INAUGURAL MENTORSHIP, SCHOLARSHIP INITIATIVE FOR STUDENTS IN AI

BY EDDY DURYEYEA

Faculty in UCF's College of Sciences and College of Engineering and Computer Science are preparing incoming students to keep pace with the emerging multidisciplinary field of artificial intelligence.

A team of five faculty, led by UCF's Center for Research in Computer Vision (CRCV), recently received a U.S. National Science Foundation grant totaling nearly \$2.5 million over five years to serve as resources to uplift bright yet low-income or struggling undergraduate students in pursuing a well-rounded education in AI.

STRONG-AI (STEM Opportunities for Nurtured Growth in AI) is an effort to help students anticipate and navigate the intersections of STEM careers and AI through faculty and peer mentorship and scholarship.

Nazanin Rahnavard, a professor in UCF's Department of Electrical and Computer Engineering and a STRONG-AI mentor and co-investigator, says she has seen the transformative potential of the previous NSF mentorship program.

"Our scholars may come from low-income families and may have many challenges outside of



the classroom," she says. "This program is specifically designed to help those students who without this program might not find success."

Department Chair Reza Abdolvand emphasizes the importance of an encouraging environment for all students.

"Our faculty and staff, with Dr. Rahnavard as a shining example, take pride in fostering a learning community where students feel supported, valued and empowered," he says.

As part of the effort, Mubarak

Shah, UCF trustee chair professor of computer science and founding director of CRCV, will work with students on computer vision and simulation. Rahnavard will focus on computer engineering.

"AI by nature is interdisciplinary," says Rahnavard. "It integrates mathematics, engineering and computer science. It is beneficial to integrate many diverse perspectives across these different fields, and it provides our students with a better background to be prepared for their career in AI."

# From Ph.D. to PROFESSOR

## DOCTORAL GRADUATES BEGIN CAREERS IN ACADEMICS

BY BEL HUSTON

While the majority of the new graduates at commencement will be leaving a college campus for good, a select few will head to a new campus. This time however, they'll be teaching classes, starting their own labs and advising graduate students.

Four students from the UCF Department of Electrical and Computer Engineering have earned their doctoral degrees and started their careers in academia this fall:

- Jorge Manrique Castro earned his doctorate in electrical engineering and is a tenure-track assistant professor at the University of Texas at El Paso.

- Sahin Gullu earned his doctorate in electrical engineering and is a tenure-track assistant professor at Nevsehir Haci Bektas Veli University.
- Mousam Hossain earned her doctorate in computer engineering and is a tenure-track assistant professor at Southern Illinois University.
- Muhammad Rashedul Haq Rashed earned his doctorate in computer engineering and is a tenure-track assistant professor at the University of Texas at Arlington.

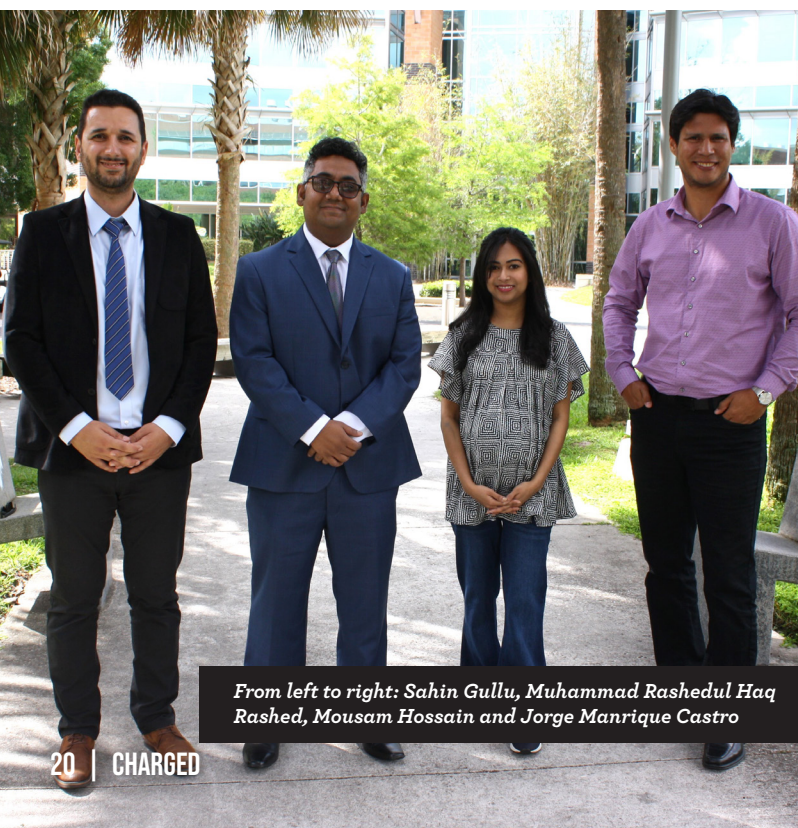
The new graduates chose UCF for their doctoral studies for different reasons, including research specialization options, state-of-the-art facilities, the university's top rankings and multicultural community.

"UCF provided strong academic support, relevant coursework, excellent lab facilities and collaborative opportunities which were crucial for my academic and research growth," Rashed says.

Though they may be leaving UCF, as they say, "once a Knight, always a Knight." All will depart with fond memories of the university.

For Gullu, a recipient of the department's Best Graduate Teaching Assistant (GTA) Award, his first official teaching responsibility marks his favorite memory.

"The day I learned that I was selected as a GTA is my fondest memory because I always wanted to teach, convey my experiences and interact with students," he says. "I am still excited to go to a class or laboratory to share my knowledge and to help my students in their careers."



From left to right: Sahin Gullu, Muhammad Rashedul Haq Rashed, Mousam Hossain and Jorge Manrique Castro

# ELECTRICAL ENGINEERING STUDENTS EARN IEEE SCHOLARSHIPS

Two electrical engineering seniors, Nicole Parker and Maria Bonina Zimath, have won scholarships from the Institute of Electrical and Electronics Engineers Power and Energy Society (IEEE PES) in recognition of their academic excellence and their promising future careers.

The IEEE PES Scholarship Plus Initiative is awarded to undergraduates majoring in electrical engineering with exceptional GPAs, involvement in distinctive extracurricular activities and a commitment to the power and energy field. Parker and Zimath each received a \$2,000 scholarship.

Parker serves as the vice president of the UCF chapter of IEEE PES. She says she chose her field of study because she has always been passionate

about helping the environment. As a future electrical engineer, she plans to focus on sustainability in the power and renewable energy field.

Zimath, who serves as president of the university's IEEE PES chapter, says she chose to study electrical engineering because of her fascination with innovation and technology, and her motivation to work on challenges related to creating a renewable grid.



# INAUGURAL NORTHROP GRUMMAN SCHOLARSHIPS AWARDED

A new partnership with one of the world's foremost aerospace and defense companies is opening doors for UCF electrical and computer engineering students.

Four undergraduate students have been chosen for the inaugural Northrop Grumman Undergraduate Scholars program, which provides the opportunity to conduct research in UCF labs, receive mentorship from faculty and intern at Northrop Grumman this summer. The selected students are computer engineering sophomores Bao Ho and Joshua Joseph, junior Valentina Terry and senior Raul Graterol.

“The Northrop Grumman Scholars program embodies the UCF Department of Electrical and Computer Engineering’s dedication to forging significant educational and vocational pathways for ECE students,” says chair Reza Abdolvand. “We extend our profound gratitude to

Northrop Grumman’s leadership for recognizing the merit in early investments within our student body.”

Each student is paired with an advisor from the department, providing a support system for the students and the opportunity for additional hands-on training at UCF. Faculty members Mike Borowczak, Di Wu, Sazadur Rahman and Ronald DeMara are serving as mentors while the students, in turn, provide assistance in their labs.



From left to right: Mike Borowczak, Joshua Joseph, Ron DeMara, Raul Graterol, Di Wu, Bao Ho, Sazadur Rahman and Valentina Terry

# A Shared VISION

## UCF ASSISTANT PROFESSOR IS CHARGED TO UNLEASH STUDENT POTENTIAL

BY BEL HUSTON

**D**i Wu, an assistant professor in the UCF Department of Electrical and Computer Engineering, was one of 12 new faculty who came to the College of Engineering and Computer Science (CECS) last year as part of the largest cohort of members to join the department. He specializes in computer architecture, or how computer systems are designed and how their components work together.

“This field continually presents new challenges and opportunities,” he says. “As an adventurous and curious person, I am drawn to this hybrid discipline and excited to embark on its unknown journey.”

Wu earned his doctorate in electrical and computer engineering from the University of Wisconsin, Madison, before moving to Orlando.

His strongest draw to UCF was its mission. Wu says he was captivated by UCF’s commitment to unleashing potential in students and faculty.

“I am very impressed by the potential of UCF CECS to impact the research community, given its established strength in computer science broadly,” he says. “This vision aligns perfectly with

mine. The college has extensive support for new faculty, in terms of administration, funding, collaboration and beyond.”

Today, Wu is working towards that shared vision in a number of ways. He’s celebrating two awards he received this year: the Harold Peterson Outstanding Dissertation Award from UW Madison, and a Distinguished Artifact Evaluation Award from the 2024 International Conference on Architectural Support for Programming Languages and Operating Systems.

He is also serving as a mentor for the department’s interns at Northrop Grumman and AMD. Both programs give students the opportunity to develop

research for Northrop Grumman and AMD, and intern at their facilities. Additionally, Wu started a computer architecture speaker series, inviting faculty from around the nation to share their latest work.

His lab U.N.A.R.Y. — Unary, Neuromorphic, Approximate, Reconfigurable and Yet more computing — is the research home to a mix of undergraduate and graduate students.

“It’s incredibly exciting to watch students acquire new knowledge and advance in their careers,” he says. “I find my role as a faculty member deeply fulfilling, especially when I can assist students in overcoming challenges.”





# INDUSTRIAL ADVISORY BOARD MEMBERS

*Industry involvement is essential to the success of the UCF Department of Electrical and Computer Engineering (ECE) educational and research mission. The Industrial Advisory Board builds partnerships between our researchers and companies that have a strategic interest in electrical and computer engineering development. We are grateful for the continued support of our dedicated board members, who help ensure that ECE's research and educational efforts address the needs and challenges of the industry, while supporting and enhancing our infrastructure, students, curriculum and research.*

- Jeremy Adams**, Micross
- Alberto Canabal**, Qorvo
- Hans Fernlund**, AMD
- Milind Ghulghule**, Siemens Energy
- Herb Gingold**, Apogee Semiconductor
- Lou Glaros**, Lockheed Martin Missions and Fire Control
- George Gurlaskie**, Duke Energy
- Kevin Hoopingarner**, Renesas
- W. Joel D. Johnson**, L3Harris Corporation
- Douglas L. Juul**, Lockheed Martin Missiles and Fire Control
- Carolyn Kirin**, Northrop Grumman
- Donna Kocak**, L3Harris Corporation
- Steven Leonard**, Northrop Grumman
- Teri Lindsey**, Siemens Energy
- Rex McCrary**, AMD
- Faheem Mohademi**, Texas Instruments
- Jose Nunez**, NASA
- Dan Scherle**, Enercon Services
- Manoj Shah**, GE and FAMU-FSU College of Engineering
- Alireza Shahnam**, ACD Telecom
- Jim Vinson**, Renesas

*Lend your time and talent to our Industrial Advisory Board. Contact Reza Abdolvand for more information at [Reza.Abdolvand@ucf.edu](mailto:Reza.Abdolvand@ucf.edu).*

**THANK YOU TO OUR INDUSTRY PARTNERS FOR THEIR SUPPORT**





**UCF**

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
UNIVERSITY OF CENTRAL FLORIDA  
4328 SCORPIUS STREET  
ORLANDO, FLORIDA 32816

**ECE.UCF.EDU**

**CONNECT WITH US**



## **UNDERGRADUATE PROGRAMS**

**Bachelor of Science in Computer  
Engineering**

**Bachelor of Science in Electrical  
Engineering**

## **GRADUATE PROGRAMS**

**Master of Science in Computer  
Engineering**

**Master of Science in  
Electrical Engineering**

**Master of Science in  
Robotics and Autonomous  
Systems**

## **DOCTORAL PROGRAMS**

**Ph.D. in Computer  
Engineering**

**Ph.D. in Electrical Engineering**

## **CERTIFICATES**

**Undergraduate Certificate in  
Semiconductor Engineering and Manufacturing Instruction**

**Graduate Certificate  
in Electronic Parts Engineering**

**Graduate Certificate in  
Sustainable and Resilient Energy Systems**