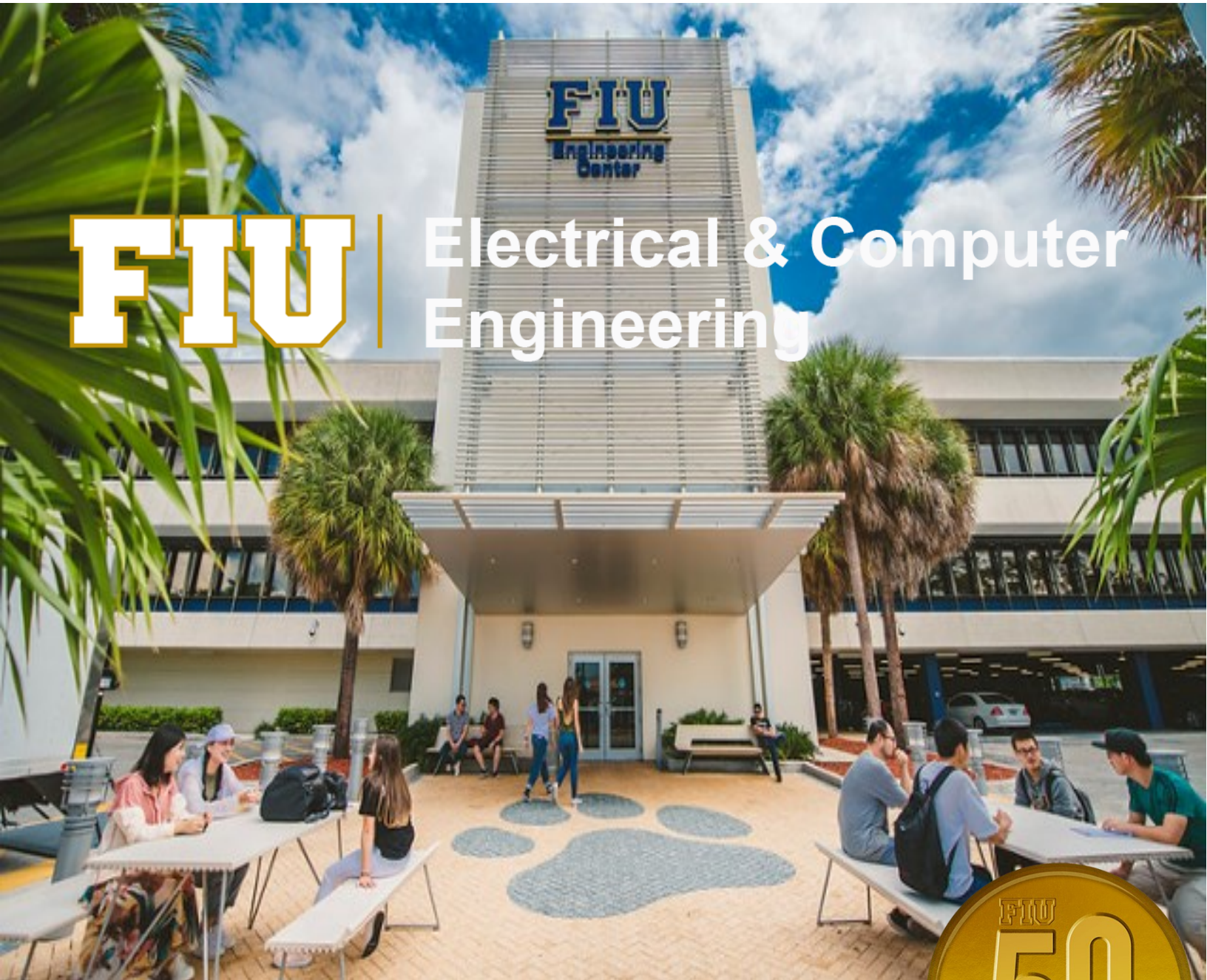




## 2022 FIU ECE ANNUAL REPORT

# FIU

# Electrical & Computer Engineering



**FIU is confident to be among the top 50 public universities in the U.S. News & World Report rankings by 2025**



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# Making History: A Year of Firsts



## Making history as the first African American Female Chair of the FIU ECE Department.

During the first semester of my first year at FIU, and my first time living in Miami, an opportunity arose to self-nominate for the position of Chair of the Electrical and Computer Engineering (ECE) Department at FIU. Taking a step of faith, I self-nominated for the position and began preparing for the process. From my prior experience building and growing a technology company, I knew the key elements of my vision for the department would require engaging and strategically deploying the expertise and strengths of the department. Taking a people-centered approach meant finding ways to be inclusive of everyone across the department, including our 6 active past ECE Chairs still working and serving in the department. After interviewing and presenting my vision to the department, I received the majority vote from the ECE faculty. My first six months as ECE Chair was full of “firsts”: leading the department through my first ABET accreditation of 2 programs, leading my first Tenure and Promotion cycle for 5 faculty members, performing my first annual faculty evaluations and assignments, preparing for my first faculty meeting, organizing my first Annual Faculty Retreat, and launching my first student-focused initiative to provide first-author, high-impact publication incentives for our graduate students.

Navigating the challenges along the way to completing these major milestones was possible with a great administrative team, the dedicated support of excellent faculty and staff and strong collaboration within departmental committees. The talented people within the ECE department have positioned us to accelerate growth both operationally and in research. For example, one of our students, a former software engineer, has been instrumental in assisting our business intelligence and data science efforts across the department to enable more efficient data-driven decision making. This student has also led all our social media campaigns and has significantly grown the social presence for the department through platforms such as LinkedIn and Twitter. In research, we’ve initiated activities to grow the department in the areas of Quantum Engineering, Microelectronics and Nuclear Engineering. Through engagement and workforce development plans with the Dept. of Energy National Labs and MIT Lincoln Labs, Idaho National Lab, Oakridge National Lab, Brookhaven National Lab, National Renewable Energy Lab and Kansas City National Security Center, we’re strategically partnering for continued growth.

**Deidra R. Hodges, Ph.D.**  
**ECE Department Chair, Associate Professor**  
**Department of Electrical and Computer Engineering**





# Vision from the President

Dear FIU family,

With a humble heart and a great sense of Panther pride, I am honored to begin my journey as the sixth president of FIU, an institution that means so much to me and to our students, faculty, staff, alumni, and community.

Today, as I begin this new chapter, I am grateful to every member of our FIU family for your tireless work and passion for FIU. On a personal note, I thank you for your support and guidance, especially throughout my months of service as Interim President. I am also thankful to the members of our FIU Board of Trustees and the Presidential Search Committee for entrusting me to lead FIU to new heights. I humbly look forward to meeting with the Board of Governors next month as part of the presidential confirmation process and thank its members in advance for their support of FIU.

As a proud member of the Panther family for the last 13 years, I firmly believe in the strength of our university community, one that for 50 years has pushed boundaries, exceeded expectations, and affected change in our city, the state, our nation, and the world. Inspired by our past, and propelled by the hopes and dreams of tomorrow, I am energized and optimistic about all that we will accomplish together.

At FIU, we have a unique opportunity to continue being a leader in solving the most complex problems of our day, all while giving committed and hardworking students in our community the chance to succeed. As your President, I promise to lead FIU with humility, honesty, and integrity, always keeping an open mind and listening to you.

As I mentioned in last week's community sessions, my presidency will be anchored by four key pillars: student success, research excellence, sustainable resources, and affinity and engagement. Guided by FIU's Next Horizon 2025 Strategic Plan, I am confident that we will be among the top 50 public universities in the U.S. News & World Report rankings by 2025.


We are well on our way. FIU is the fastest-rising university in U.S. News public rankings in the last 10 years, and we have already achieved many "Top 50" rankings, including those focused on economic mobility, return on investment, innovation, and research expenditure growth, which are so closely aligned to our mission.

As the largest R1 Hispanic Serving Institution in the country, FIU will continue to invest in our students and their academic and career successes. In addition, we will continue to support and embrace faculty who are pushing the boundaries of research and bringing that knowledge into the classroom as part of evidence-based and inclusive teaching that educates students to be critical thinkers and problem solvers.

FIU has always had lofty goals. As President, and with your support, I will work every day to make sure we continue this tradition into our next 50 years.

I look forward to what is next for this university, and I am grateful to all of you for joining me in this new and exciting journey for FIU.

Sincerely,



Kenneth A. Jessell  
President-Designate





# Fast Facts

2022



## RESEARCH

**\$8.8M**

in total research awards

**\$382K**

per principal investigator

**18**

research laboratories

INNOVATION  
**10 patents**  
issued in 2022



## STUDENT PROFILE



**1379 students**

1,141 Undergraduate 238 Graduate



**13% Female**

80% Undergraduate  
20% Graduate



**U.S. News and World Report Public Institutions Rankings for Graduate Programs:**

**WE ARE AMONG TOP 50**

Electrical and Electronic Engineering: **#42**

Engineering Electrical and Electronic: **#43**

Computer Science and Information System: **#44**

Telecommunication Engineering: **#31**

Engineering and Technology: **#40**

Best Online Engineering Programs: **#37**

**3:1**

Ph.D. student advising per faculty ratio

## 30 FACULTY FELLOWSHIPS

- National Science Foundation
- National Security Agency
- NASA Ames Research Center
- U.S. Air Force Research Laboratory
- U.S. Department of Energy
- U.S. Department of Veterans Affairs
- National Aeronautics & Space Administration
- Northrop Grumman
- Florida Power and Light
- Office of Naval Research
- Battelle
- University of Florida
- Northeastern University
- University of Utah
- North Carolina State University

## Research Awards

FIU awarded **\$1 million** to develop 5G/6G cybersecurity

Mohammad Ashiqur Rahman received **\$2 million** from the U.S. Department of Energy

**\$1.5 million** on cybersecurity institute of Cyber Operation Research

## Faculty Awards

**Dr. Shekhar Bhansali**

Elected 2023 Fellow by IEEE for contributions to portable real-time sensing devices for continuous monitoring

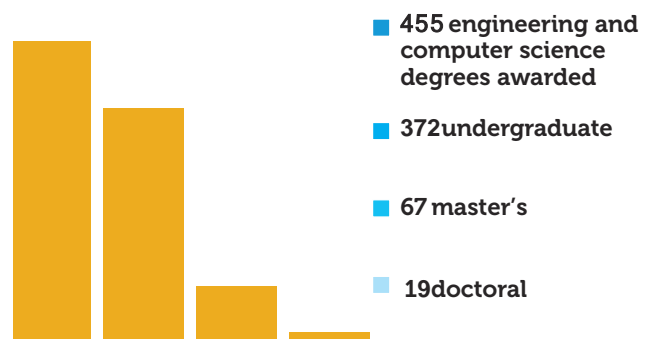
**Dr. Kemal Akkaya**

Elected 2023 Fellow by IEEE for contributions to routing and topology management in wireless ad hoc and sensor networks

## TOTAL DEGREES AWARDED IN FY2021-2022

B.S./B.A. **373** M.S. **67** Ph.D. **19**

## DEGREES AWARDED



**19** Ph.D. Degrees in FY 2021-2022

**FIU RANKED 42th WORLDWIDE UNIVERSITIES GRANTED U.S. UTILITY PATENTS**

# Research Awards

## FIU awarded \$1 million to develop 5G/6G cybersecurity solutions



FIU awarded \$1 million to develop 5G/6G cybersecurity solutions  
The National Science Foundation (NSF) has awarded a team of researchers, including researchers from FIU's College of Engineering and Computing, \$1 million to continue their work to help thwart cyberattacks from computers and mobile devices to large-scale networks.

## Mohammad Ashiqur Rahman received \$2 million from the U.S. Department of Energy

FIU's College of Engineering and Computing researchers have received a \$2 million award from the U.S. Department of Energy (DOE) to help develop technology to prevent, detect, analyze and mitigate cyberattacks against U.S. energy systems." Our FIU team is very experienced in cybersecurity and smart energy grids. We are proud to lead the project to advance state-of-the-art methods in cyberattack detection and to harden our power grids," said Mohammad Ashiqur Rahman, the lead principal investigator and assistant professor.



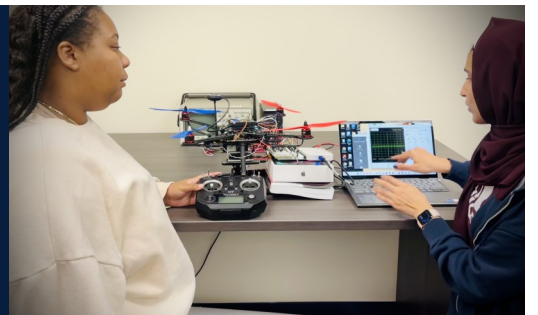
## \$1.5 million on cybersecurity institute of Cyber Operation Research (VICOR)



FIU and UAlbany researchers team up to launch \$1.5 million virtual cybersecurity institute of Cyber Operation and Research (VICOR), which aims to equip students with applied cyber operational skills through hands-on learning and research opportunities. "We are pleased in achieving this award and recognition, as it enhances FIU's leadership and commitment to cybersecurity research and education," said Alexander Perez-Pons, an associate professor at FIU's Department of Electrical & Computer Engineering. "We hope to develop a highly skilled cybersecurity workforce while embracing the opportunities

## FIU received \$750,000 award from National Security Agency (NSA)

FIU has received an award from National Security Agency (NSA) for an unmanned aircraft system (UAS)/drone security project. FIU leads this effort. FIU's team includes Dr. Mohammad Ashiqur Rahman (PI), Dr. Tauhidur Rahman (Co-PI), and Dr. Alexander Pons (Senior Personnel). The total award amount is \$750,000, which will be utilized next three years to research UAS hardware security and develop defense measures.





# Research Awards

## Dr. Selcuk Uluagac received \$300K NSF Grant



*Dr. Selcuk Uluagac*

**Dr. Selcuk Uluagac** received NSF Grant - Amount: \$300K from NSF's cybersecurity program in collaboration with Northeastern University. The project investigates the sensory side-channel (e.g., acoustic, seismic, light, temperature) threats to CPS devices and applications and evaluates the feasibility and practicality of the attacks on real CPS equipment. The result is novel sensory side-channel-aware security tools and techniques for the CPS devices.

## 5 FIU professors receive NSF CAREER Awards

Five junior faculty members of FIU's College of Engineering and Computing are the latest recipients of the prestigious National Science Foundation (NSF) CAREER Award, bringing the college's total number of awardees to 24. Ibrahim, an assistant professor of Electrical and Computer Engineering, will receive a five-year, \$500,000 grant to enable low-delay wireless networks. These networks support lifesaving connected vehicles and augmented reality applications, which are essential in remote health care.



*Dr. Ahmed Ibrahim*

## Prestigious NSF grant awarded to FIU engineering professor for 'smart' bandages

Prestigious NSF grant awarded to FIU engineering professor for 'smart' bandages. In the future, a "smart" bandage being developed at FIU's College of Engineering and Computing could remotely send real-time information directly to physicians to advise them how well a patient's chronic wound is healing.



*Dr. Satheesh Bojja Venkatakrishnan*

## Dr. Alwan received \$750k grant from NSF/DOD



*Dr. Elias Alwan*

NSF Convergence Accelerator Track G: Autonomously Tunable Waveform-Agnostic Radio Adapter for Seamless and Secure Operation of DoD Devices Through Non-Cooperative 5G Networks. This \$750k grant is in collaboration with Florida Atlantic University, Virginia Tech, and PQsecure. FIU is the lead institution.

## Mohammad Ashiqur Rahman received \$2 million from the U.S. Department of Energy

FIU's College of Engineering and Computing researchers have received a \$2 million award from the U.S. Department of Energy (DOE) to help develop technology to prevent, detect, analyze and mitigate cyberattacks against U.S. energy systems.

"Our FIU team is very experienced in cybersecurity and smart energy grids. We are proud to lead the project to advance state-of-the-art methods in cyberattack detection and to harden our power grids," said Mohammad Ashiqur Rahman, the lead principal investigator and assistant professor and the director of the Analytics for Cyber Defense (ACyD) Lab. "Protecting the security of America's power is crucial as we face increasing cyber threats."

The project, entitled "Artificial Intelligence-Enabled Tools (ArtIT) for Cyber Hardening of Power Grids," involves developing artificial intelligence techniques and analytics that identify attacks in real-time and creating intelligent controllers to enhance the bulk power system's attack resiliency. The team will then validate and test the tools in collaboration with utility and industry partners.

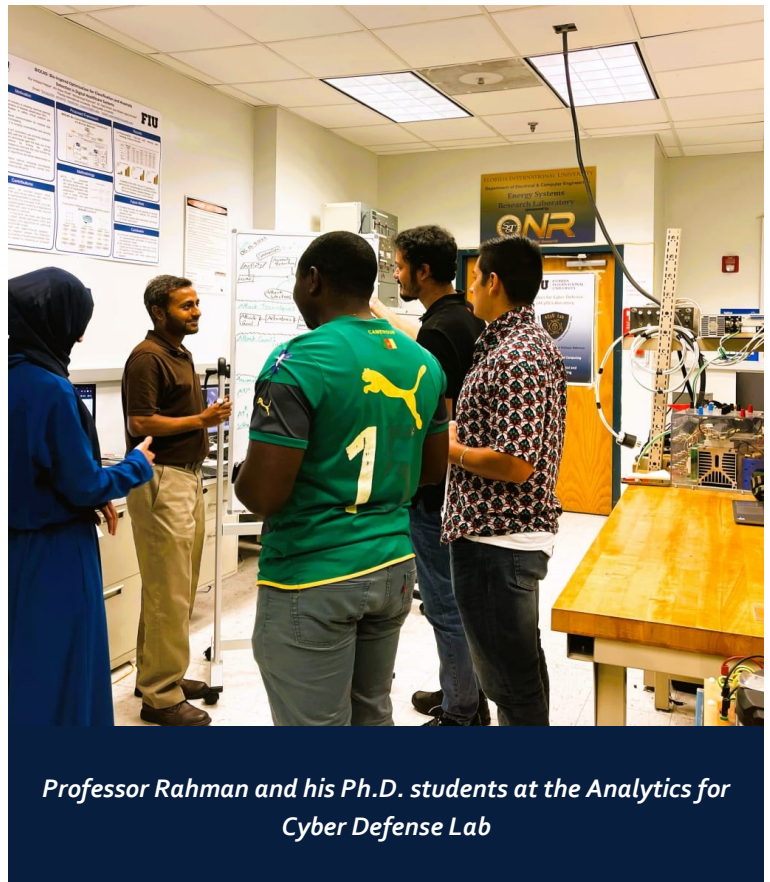
"Each element of the project tackles a specific problem," Rahman said. "For example, an important piece is enhancing the moving target defense, a strategy used to confuse cyber attackers. They think they know who they are attacking, but in reality, we have changed the measures so that the attack applies to a different set of targets — a set not susceptible to their tactics. This deception makes it easier to detect and mitigate an attack in real-time."

The project is one of six new research, development and demonstration projects funded by the DOE for a total of \$12 million. In addition to FIU, these awards are going to university teams at Iowa State University, New York University, Texas A&M Engineering Experiment Station, the University of Illinois at Chicago, and Virginia Polytechnic Institute and State University.

"This funding will bolster our commitment to a secure and resilient clean energy future by fortifying American electricity systems and building a stronger grid," said U.S. Secretary of Energy Jennifer Granholm.

Rahman is joined by FIU's Sumit Paudyal, associate professor; Kemal Akkaya, professor; and Selcuk Uluagac, associate professor — all from the Department of Electrical and Computer Engineering. They have partnered with researchers at North Carolina State University, the University of North Carolina at Charlotte, Raytheon Technologies Research Center and Duke Energy Corporation.

"That FIU is leading the way on research vital to our country is a testament to our faculty's expertise in cybersecurity and power grid security," said John L. Volakis, dean of the College of Engineering and Computing. "I'd like to congratulate and thank all team members. They are innovators who are making a difference in our community and far beyond."



*Professor Rahman and his Ph.D. students at the Analytics for Cyber Defense Lab*



## FIU awarded \$1 million to develop 5G/6G cybersecurity solutions

The National Science Foundation (NSF) has awarded a team of researchers, including researchers from FIU's College of Engineering and Computing, \$1 million to continue their work to help thwart cyberattacks — from computers and mobile devices to large-scale networks.

The research aims to create security solutions for 5G/6G networks. While these Next Generation Networks (NextG) provide faster, high-bandwidth and high-quality services — and have the capability of connecting millions of IoT (Internet of Things) devices — they also increase the possibility of compromised security.

Transportation, energy systems, manufacturing, healthcare and agriculture are among the many sectors that may use wireless devices on NextG Networks. Drones, autonomous vehicles, smart city sensors and power grid devices communicate through wireless connections — some of them unattended or not regularly updated.

“The new technology doesn't just add bandwidth,” said Professor Kemal Akkaya, head of the Advanced Wireless and Security Lab (ADWISE) in the Department of Electrical & Computer Engineering, who is FIU's co-principal investigator on the project, along with Professor Ahmed Ibrahim. “It's a matter of significantly increasing the number and types of devices. While your phone is something you own and carry with you, which makes it possible for you to manage and protect to some degree, some IoT devices can be accessed by outsiders physically or through cyberattacks. An attack like that could go unnoticed for some time.”

The team of scientists is specifically studying methods to reduce the odds of attack by the quantum computers of the future that will target 5G/6G systems. Quantum computers are extremely powerful and fast and can process huge amounts of data in different ways than today's standard computers. If quantum-safe cryptography algorithms are not developed and adapted to 5G/6G systems, quantum computers will be able to quickly crack most of the existing cryptographic algorithms in current cellular systems, driving data breaches that could cause long-lasting damage to government, commercial entities, and businesses, as well as individuals.



*Professor Akkaya holds "Friday Talks" with his students to discuss FIU's cybersecurity research and initiatives*



“We are always working five to 10 years in the future, developing ways to safeguard our information as breakthroughs that impact telecommunications are made,” Ibrahim said. “Our devices are very vulnerable, particularly as 5G, and then 6G, technologies are being deployed.”

The three-year project, entitled “RINGS: Bringing Post-Quantum Cryptography to Large-Scale NextG Systems,” is a collaboration with Florida Atlantic University and its principal investigator Reza Azarderakhsh, and Marquette University, whose principal investigator Mumin Cebe, is Akkaya's former student at FIU.

“Whatever we do here will probably be translated into standards and adopted by telecom operators. This is crucial technology for our nation,” Akkaya said.

FIU's expertise in wireless network security contributed to the university's NSF award.

Akkaya has spent the last 15 years focusing on the integrity, confidentiality, and authentication of wireless communications and IoT.

The NSF RINGS (Resilient & Intelligent NextG Systems) program is the agency's most extensive effort to bring the public and private sectors together to support research that protects and helps grow the use of next-generation networks.

# 37 Patents in 2021-2022

<i>Issue Date</i>	<i>Patent Number</i>	<i>Title</i>	<i>Name</i>
10/25/2022	11480626	Systems and Method for Testing Battery Management Systems	Alexander Stevenson, Arif Sarwat, Asadullah Khalid
10/18/2022	11476673	Systems and Methods for Distribution Optimal Power Flow	Arif Sarwat, Temitayo Olowu
10/11/2022	11469519	Antenna Arrays with Three-Dimensional Radiating Elements	Abdul-Sattar Kaddour, Stavros Georgakopoulos
8/9/2022	11410776	Systems and Methods for Formal Threat Analysis of a Smart Healthcare System	Mohammad Rahman, Nur Imtiazul Haque
7/5/2022	11381582	Energy Cyber-Physical System Digital Twin Playground	Ahmed Aly Saad Ahmed, Osama Mohammed
5/31/2022	11347997	Systems and Methods Using Angle-Based Stochastic Gradient Descent	Alexander Perez-Pons, Chongya Song
5/24/2022	11342795	Power Transfer and Harvesting System Having Anchor-Shaped Antennas	Dieff Vital, John Volakis, Shubhendu Bhardwaj
5/10/2022	11329806	Systems and Methods for Authentication and Key Agreement in a Smart Grid	Kemal Akkaya, Mumin Cebe
4/12/2022	11303029	Arrays with Foldable and Deployable Characteristics	Constantinos Zekios, Muhammad Hamza, Stavros Georgakopoulos
3/22/2022	11284255	Systems and Methods for Distributed Authentication of Devices	Kemal Akkaya, Mia Abdelmaguid Mahmoud Abdelmalek
11/30/2021	11190055	Simultaneous Wireless Power and Data Transfer System	Stavros Georgakopoulos
10/5/2021	11135589	Large Microfluidic Bioreactor and Manufacturing Method Thereof	Natalia Bourgignon, Shekhar Bhansali
9/28/2021	11130283	Glass Scintillators and Methods of Manufacturing the Same	Nezih Pala
9/28/2021	11132441	Systems and Methods for Inhibiting Threats to a Computing Environment	Arif Uluagac, Enes Erdin, Kemal Akkaya, Kyle Denney, Leonardo Babun Abijana
9/28/2021	11133588	Phase Change Material Based Reconfigurable Intelligent Reflective Surfaces	Nezih Pala, Randy Matos
9/28/2021	11133851	Beamforming Configuration via Cross-Mixing	Elias Alwan, John Volakis, Rimon Hokayem
9/21/2021	11128463	A Cost-efficient IoT Forensics Framework with Blockchain	Arif Uluagac, Kemal Akkaya, Mumin Cebe, Suat Mercan
9/7/2021	11110052	3D Navigation of Nanoparticles Via Induction of Metastable Diamagnetic Response	Abhignyan Nagesetti, Sakhrat Khizroev, Tiffanie Stewart
8/3/2021	11076786	Wound Monitoring Sensors and Use Thereof	Shekhar Bhansali, Sohini
7/20/2021	11065164	Smart Bandage for Electrochemical Monitoring and Sensing Using Fabric-Integrated Data Modulation	Choudhury, Yogeswaran Umasankar
7/13/2021	11063475	Power Transfer and Harvesting System Having Anchor-Shaped Antennas	Dieff Vital, John Volakis, Pulak Bhushan, Shekhar Bhansali, Shubhendu Bhardwaj
7/6/2021	11056791	Arrays with Foldable and Deployable Characteristics	Dieff Vital, John Volakis, Shubhendu Bhardwaj
6/1/2021	11022720	System for Forecasting Renewable Energy Generation	Constantinos Zekios, Muhammad Hamza, Stavros Georgakopoulos
4/6/2021	10969436	Systems and Methods for Forecasting Battery State of Charge	Aditya Sundararajan, Arif Sarwat, Avinash Jeewani, Hugo Riggs, Shahid Tufail
3/23/2021	10958211	Systems and Methods for Power Management	Aditya Sundararajan, Arif Sarwat, Asadullah Khalid
3/9/2021	10940639	Glass Scintillators and Methods of Manufacturing the Same	Aditya Sundararajan, Arif Sarwat, Temitayo Olowu
3/9/2021	10944166	Balun for Increasing Isolation in Simultaneous Transmit and Receive Antennas	Nezih Pala
3/2/2021	10938109	Foldable and Reconfigurable Antennas, Arrays and Frequency Selective Surfaces with Rigid Panels	Alexander Hovsepian, John Volakis, Satheesh Bojja Venkatakrishnan
2/23/2021	10926046	Gravity Dependent Ventilator	Shun Yao, Stavros Georgakopoulos
2/23/2021	10926261	Large Microfluidic Bioreactor and Manufacturing Method Thereof	Grover L. Larkins
2/23/2021	10929530	Systems and Methods for Monitoring Activity in an HDMI Network	Natalia Bourgignon, Shekhar Bhansali
2/23/2021	10931022	Reconfigurable Arrays with Multiple Unit Cells	Arif Uluagac, Kemal Akkaya, Leonardo Babun Abijana, Luis Puche Rondon
2/2/2021	10909438	Passive RFID Temperature Sensors With Liquid Crystal Elastomers	Abdul-Sattar Kaddour, Constantinos Zekios, Stavros Georgakopoulos
2/2/2021	10910691	Multiple Input Multiple Output Antenna Devices	Stavros Georgakopoulos, Yousuf Shafiq
2/2/2021	10910713	Reconfigurable Rotational Reflectarrays	Constantinos Zekios, Nicholas Russo, Stavros Georgakopoulos
2/2/2021	10910835	Systems and Methods for Protecting Against Fault Currents	Abdul-Sattar Kaddour, Stavros Georgakopoulos
2/2/2021	10911471	Systems and Methods for Network-Based Intrusion Detection	Mohammad Mahmoudian Esfahani, Osama Mohammed
			Alexander Perez-Pons, Chongya Song



## Educational Enhancements

### *Voices from students*

The chair and the professor answered all kinds of questions that the students encountered during the learning process. The department designed a questionnaire to collect students' opinions and opinions on the department. We hope to gain insight into the learning dynamics of the students through more communication, whether it is learning or Life. Students and departments are closely linked and we hope students enjoy the learning process at FIU-ECE. We received 95 valid questionnaires after the meeting. The content of the questionnaire will help us to improve, and it's our business to grow yours!



## *ECE Social Media Promotion*



**Yuanzhou(Joe) Wei** works for Florida International University - Electrical & Computer Engineering department as a Data/Web Engineer Assistant, he led the data analysis, website construction and social media operation of the ECE department. He collects and analyzes data on student learning and research, helps the department listen to the voice of students, analyzes department registration and development data, and provides developmental insights. With his efforts, Florida International University - Electrical & Computer Engineering department has reached 1300 followers within 6 months. We will continue to share more information about the department on our social medias!



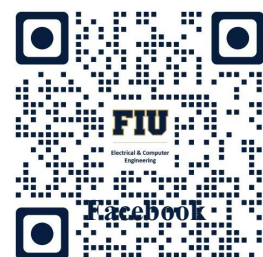
Florida International University - Electrical &amp;...

Leading transformation and innovation within the engineering community, both nationally and internationally.

Higher Education · Miami, FL · 1,171 followers

[↪ Share Page](#)

*Scan and follow FIU-ECE Social Medias*



# Faculty Retreat

The ECE Department's Annual Faculty Retreat was held in September 2022 at FIU's Graham Center at the Modesto A. Maidique Campus (MMC). With more than 60 people in attendance, we received a welcome message from Dean John Volakis. Associate Dean Osama Mohammed gave an overview of our Research, including awards and expenditures. We continued the retreat working on items in preparation for our ABET site visit. The retreat ended with a panel discussion from past chairs of the departments, who provided us with a very rich conversation about the evolution of the ECE department.

Dr. Deidra Hodges first introduced the new faculty and new appointments.

Dean John (Yiannis) Volakis made an opening welcome speech, and CEC and Engineering I & II Updates.

Assoc. Dean & School Dir., Prof. Osama Mohammed shared the school Director's Report.

Dr. Herman Watson and Dr. Gustavo A. Chaparro-Baquero shared the ABET and Assessments.

Dr. Deidra Hodges shared the Highlights & Metrics, Research Groups, Ph.D. Production, Teaching & SPOTS, Service & Committees, Diversity, Equity & Inclusion, Phishing & Cyber Security.

Joe Wei shared the Faculty Websites development schedule, social media operating report, and graduate student survey report.

Dr. Nezhil Pala shared the T & P updates and the Upcoming Vote.

Dr. Atoussa Tehrani shared Class Scheduling updates.

Dir. Robert H. Hacker shared Startup FIU information.

Dr. Elias Alwan shared the New Research Initiative.

Dr. Wilmer Arellano shared the Senior Design updates.

Prof. Gustavo Roig, Prof. Malek Adjouadi, Assoc. Prof. Jean Andrian participated in the Panel Discussion and shared "FIU ECE Evolution: Past, Present and the Future."

FIU's growth is inseparable from everyone's hard work and dedication. Best wishes to FIU and FIU-ECE!



## ABET



The Engineering Accreditation Commission (EAC) of ABET, Inc. accredits engineering programs on a nationwide basis. ABET accreditation provides assurance that a college or university program meets the quality standards established by the profession for which the program prepares its students. We had our ABET site visit in October 2022, for reaccreditation of our Electrical and Computer Engineering programs. Dr. Herman Watson, Dr. Gustavo Chaparro-Baquero, Dr. Deidra Hodges successfully led the ABET effort.

## ECEDHA

We attended the Electrical and Computer Engineering Department Head Association (ECEDHA) 2022 Annual Conference in New Orleans, LA. Attended the new chairs session and had the opportunity to meet many ECE chairs and department heads. We are planning to attend the 2023 ECEDHA Annual Conference in Santa Ana Pueblo, NM.







# 2022 FIU Senior Design Showcase



**Filament Heating Chamber & Feeding Mechanism For 3D Printers**  
 Erick Charles, Enzo Balladares, Justin Lee, Titus Thomas, Luis Becerra



**Traffic Light System**  
 Faisal Alotaibi, Yousef Alotaibi, Khaleel Khaleel



**Portable Efficient Alternating Current Energy (PEACE)**  
 NextEra Energy, Marvin Castellon, Gabriella Urgiles, Jean C Rodriguez, Javier Alvarez



**The Smart Container: Using Thermoelectrics for Precision Cooling in Medical Logistics**  
 Daniel de la Cruz, Jose Martinez, Kendia Pinder



**Neural Amp**  
 Nathan Moulton, Pedro Acosta, Luis Castellanos, Sebastiane Espaillet



**Water Wand Crowdsourced Hydrometry**  
 James Acosta, Roberto Ruiz, Lazaro Osuna, Fernando Amezcuita, Rafael Nieves



# Department Activity

## A Future Ready Miami

FIU Foundation and the City of Miami discussed Miami Dade County's "A Future Ready Miami" strategic pillars, which included ways in which the Office of the Mayor is engaging with FIU, and enhancing the partnership fueling innovations in workforce entrepreneurial development, tech innovation, green agriculture, film, and entertainment.



## 1st CREPES Annual Workshop

1st CREPES Annual Workshop 2022' at Florida International University (FIU) was a great success. Thanks to all PIs, participants from National Labs, Guest Speakers, Advisory Board Members, Researchers, Collaborators, Students, and Volunteers, who made the event possible. We appreciate the support from DOE/NNSA under Minority Serving Institution Partnership Program (MSIPP) for "Consortium for Research and Education in Power and Energy Systems (CREPES) for Sustainable STEM Workforce" (<https://crepes.fiu.edu/>). We are thankful to the great collaboration among partnering Institutions and NNSA National Labs (University of Texas at El Paso, Alabama A&M University, Sandia National Lab, Lawrence Livermore National Lab). It was our pleasure to host members from Pacific Northwest National Lab (PNNL), Hitachi Energy, and Raytheon Technologies- students and researchers from CREPES greatly enjoyed interacting with them.



## Chinese Mid-Autumn Festival Lunch meeting

Florida International University - Electrical & Computer Engineering held the Welcome luncheon for Chinese students of China's Mid-Autumn Festival. Our Dean John (Yiannis) Volakis, Chair Deidra Hodges, Dr.Kang Yen gave a warm welcome for everyone's coming.



# FEMA announces national initiative to modernize building codes at FIU Wall of Wind

## FEMA announces national initiative to modernize building codes at FIU Wall of Wind

With FIU's Wall of Wind (WoW) as a backdrop, FEMA Administrator Deanne Criswell announced a new initiative by the Biden-Harris administration to modernize building codes, improve climate resilience and reduce energy costs. The announcement came on Wednesday – the first day of hurricane season.



## Head of NSF's Directorate of Engineering discusses diversity and research at FIU

"Engineering has a big road ahead in truly addressing diversity, inclusion and belonging," Margulies said to a group of students and faculty. "I think this is the perfect setting for me to listen and learn about paths that have been successful, the paths that are still challenging and your thoughts about translation to other campuses."



## Veterans gain cybersecurity skills with all-expenses-paid program

The digital forensics curriculum designed to train veterans for jobs is taught by the Gordon Institute for Public Policy, the College of Engineering and Computing and industry experts.





# FIU-FPL Artificial Intelligence-based Renewable Microgrid

On October 1<sup>st</sup>, 2021, the engineering center at Florida International University (FIU) underwent its largest transformation since 2016 with the unveiling and incorporation of a 9MWh/3MW Battery Energy Storage System (BESS) which formed, in conjunction with the existing 1.4MW solar canopy, the Artificial Intelligence-Based Renewable (AIR) microgrid. This new infrastructure will be interconnected with a Command & Control, the Center for Proactive Analytics and Data-Oriented Research on Availability & Security (PANDORAS), which not only collects the data from this on-campus power plant but from many sources across Florida.



*Dean John L. Volakis*

These facilities make FIU one of the only universities in the world with its own complete Renewable Power Plant, including 1.4MW PV and now 3MW/ 9 MWh Energy Storage, with an integrated Command-and-Control Center. The Artificial Intelligence-based Renewable (AIR) Microgrid can support the FIU Engineering campus without outside grid utility assistance during and after unstable grid or extreme weather conditions and would allow powering up the Engineering Center loads during fault conditions in the bulk grid with the use of a state-of-the-art 3MW/3.35MVA bi-directional grid-forming inverter. Other state of the art features includes black start and many ancillary grid services such as solar smoothing and frequency regulation. This groundbreaking new infrastructure will undoubtedly bring new research opportunities for years to come so that students and researchers have ability to gain hands-on experience with cutting-edge technology and enables FPL to conduct further research to help advance renewable energy and make Florida's energy infrastructure even smarter.



*Dr. Arif Sarwat*

Dr. Arif Sarwat is the Eminent Scholar Chaired Professor and Director of the FPL-FIU Solar Facility and of the Energy, Power & Sustainability Intelligence (EPSi) group at FIU. Graduate and undergraduate students in EPSi work closely with FPL and these cutting-edge power systems to enhance operational performance, flexibility, and longevity. Those interested in joining, contacting, or collaborating with EPSi should visit [eps.fiu.edu](http://eps.fiu.edu) or contact Dr. Arif Sarwat at [asarwat@fiu.edu](mailto:asarwat@fiu.edu).



*From left to right: John L. Volakis, Joe Chi, Kenneth G. Furton, Eric E. Silagy, Mark B. Rosenberg, Arif Sarwat,*



# Department Activity

## International Women in Engineering Day

FIU joins the world in celebrating International Women in Engineering Day, an annual tribute to the achievements of women in the field and the impact women continue to make in the engineering industry. Dr. Deidra Hodges, Chair of FIU's Electrical and Computer Engineering department, was featured for her work as a mentor and proponent of increasing women in engineering and other STEM fields.



## FIU helps local high school teachers build cybersecurity lessons for classrooms

FIU experts are training local high school teachers to develop cybersecurity lesson plans for their students. The Cybernet Miami Academy is an FIU-led virtual, interactive program about digital forensics, which is the process of interpreting and uncovering electronic data. “Teachers are leaving with at least one lesson plan that they have customized to best fit their students,” says Alexander Pons, principal investigator of Cybernet Miami Academy and a professor in the electrical and computer engineering department at FIU’s College of Engineering and Computing.



# FIU ECE Ph.D. First Author Publication Incentive Awards 2022

**Dr. Deidra Hodges** created this award to inspire, encourage and reward the ECE Ph.D. students to publish in high-impact factor journals, as the first author. The goal of this initiative is to motivate our ECE Ph.D. students in their scholarly research activities, and this award process will occur again in 2023. The recipients of this award had to give a talk about their research to an invited audience to receive their award. The source of funding for these



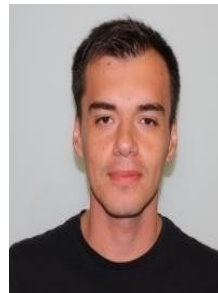
**Ph.D Maryam Mahmoudi Koutenaiei**



**Ph.D Inaolaji Adedoyin**



**Ph.D Biswas Akash**



**Ph.D Oz Harun**



**Ph.D Shojaie Mehdi**



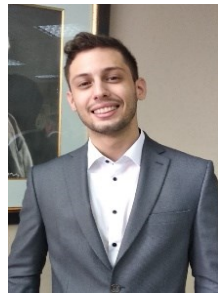
**Ph.D Hamza Muhammad**



**Ph.D Rubio Antonio**



**Ph.D Carrara Gian**



**Ph.D Lialios Dimitrios**



**Ph.D Matos Randy**



**Ph.D Benhaddouch Tinsley**



**Ph.D Ullah Kefayet**

Last Name	First Name	Advising Professor	Journal	Title of Publication
Koutenaiei	Maryam Mahmoudi	Dr. Sumit Paudyal	IEEE Transactions on Smart Grid	Efficient Phasor-Based Dynamic Volt/ Var and Volt Watt Analysis of Large Distribution Grid With High Penetration of Smart Inverters
Inaolaji	Adedoyin	Dr. Sumit Paudyal	IEEE Transactions on Industry Applications	Distribution Grid Optimal Power Flow in Unbalanced Multi
Biswas	Akash	Dr. Stavros Georgakopoulos	Nature Scientific Reports	An ultra-wideband origami micro- wave absorber
Oz	Harun	Dr. Selcuk Uluagac	ACM Computing Surveys	A Survey on Ransomware: Evolution, Taxonomy, and Defense Solutions
Shojaie	Mehdi	Dr. Malek Adjouadi	Journal of Alzheimer's Disease	PET Imaging of Tau Pathology and Amyloid-B, and MRI for Alzheimer's Disease Feature Fusion and Multi-modal Classification
Hamza	Muhammad	Dr. Stavros Georgakopoulos	IEEE Open Journal of Antennas	A Low Profile Planar Dual-Polarized Tightly Couple Dipole Reflectarray with 5:1 Bandwidth
Rubio	Antonio	Dr. Stavros Georgakopoulos	IEEE Open Journal of Antennas	A mechanically Rollable Reflectarray with Beam-Scanning Capabilities
Carrara	Gian	Dr. Stavros Georgakopoulos	IEEE Transactions on Antennas and Propagation	A TM11 High-Order Mode Leaky Wave Antenna
Lialios	Dimitrios	Dr. Stavros Georgakopoulos	IEEE Transactions on Antennas and Propagation	A Novel RF to Millimeter Waves Frequency Translation Scheme for Ultra-Wideband Beamformers Supporting the sub-6 GHz Band
Matos	Randy	Dr. Nezih Pala	Nature Scientific Reports	VO2-based ultra-reconfigurable intelligent reflective surface for 5G applications
Benhaddouch	Tinsley	Dr. Shekhar Bhansali; Dr. Dongmei Dong	RSC Advances	Aqueous/nonaqueous electrolyte tradeoffs in charge transfer and electrochromics of pseudocapacitive oxide films
Ullah	Kefayet	Dr. John Volakis; Dr. Satheesh Venkatakrishnan	2022 IEEE 2nd Annual Wireless and Microwave Technology Conference (WAMICON)	Millimeter-Wave Digital Beamforming Receiver Using RFSOC FPGA for MIMO Communications



# Industry Advisory Board and Partnerships



Best wishes to **Elicer "Eli" Viamontes**, our outgoing IAB chair, the President and CEO of Entergy Texas. Thank you for your dedication over the past 6 years! Our board members and their companies generously contribute their time, expertise and resources serving as a member of the IAB for the ECE department. They have knowledge and experience in Engineering, Business, Manufacturing, Entrepreneurship, Quality Systems, Technical Design and Regulatory Compliance. Our members contribute to the success of the ECE programs, while providing guiding to the



## **Sal Pazhoor**

President & CTO of NAZTEC International Group

Over 30 years of experience in business management, information technology, elections industry, manufacturing technologies, quality systems, international trade, and various engineering disciplines

Holder of 19 product invention patents granted by the United States Patent



## **Sherneatha Youngblood**

Executive Director

Chase Investment Bank – Merchant Services Production Management

Chair Emeritus for BOLD Tampa

Active member of the Voices of Those Who Served (VETS)

Senior Sponsor of Florida International University (FIU)

Mentor for the Big Brothers Big Sisters (BBBS) School to Work Program



## **Dr. Juan M. Gers**

Founder of GERS

Served as a professor at Florida International University, Gonzaga, Penn State, and University of Valle

Held the position of Viceminister of Mines and Energy of Colombia in 2002

Author of the book “Distribution System Analysis and Automation” (2nd Ed), Co-author of the book “Protection of Electricity Distribution Networks” (4th Ed)

Chartered Engineer of the IET and IEEE Senior Member



## **Dr. C.J. Reddy**

Dr. Reddy is a Fellow of IEEE, Fellow of ACES (Applied Computational Electromagnetics Society) and a Fellow of AMTA (Antenna Measurement Techniques Association)

Associate Editor for IEEE Open Journal of Antennas of Propagation

Chair of IEEE AP-S Young Professionals Committee



## **Dr. Dan Ewing**

Dr. Dan Ewing received a BS in Materials Engineering from Brown University, and a MS and PhD in Materials Science and Engineering from Carnegie Mellon University. He has more than 15 years of experience in thin films processing, integrated circuit and microelectronic device fabrication and characterization. His current projects include novel GaN devices, utilizing nanoscale material properties for sensing applications, including ink jet printed nanomaterials for optical and chemical sensing, and magnetic thin films for detecting magnetic fields. Prior to joining KCNSC, he was a post-doctoral fellow at the Army Research Lab in Maryland, and a process integration engineer at Northrop Grumman Electronic Systems in Baltimore. Member of IEEE



## **Carlos Perez-Crissien**

Senior Project Manager at CEMEX

In charge of the Electrical Engineering for capital projects related to CEMEX USA

Aggregates Operations

Electrical Engineering Bachelor's degree

and a Master of Business Administration

from Florida International University



## **Kane Crisler**

Physicist, Electrical Engineer, and former federal law enforcement. Professional experience in LASER/ Detector physics, signal processing, embedded design, cyber security and investigations and presidential Protection.



## **Alexander Elorriaga**

Chairman of SimpleTV

Partner of Scale Capital



## **Dr. Ali Hadjikhani**

Hardware engineer at Google

Ph.D in Electrical Engineering at FIU under the supervision of Dr. Sakhrat Khizroev

Postdoc at University of California, Berkeley



## **Riaz Merhant**

Founder and CEO of Mertech Data Systems

MS in Computer Engineering from Florida

International University (1993)

**Dr. Vikram Kapoor**, University of Central Florida

**Mr. Randy Fraser**, Ford Motor Company

**Mr. Andres Lacambra**, Senior Director, ASTRO Devices, Motorola Solutions

**Dr. Subbarao Wunnava**, Prof. Emeritus Distinguished, ECE Dept., Florida International University



# Industry Advisory Board and Partnerships



Sirius XM Radio

ManTech International Corporation

Energy Service, INC

Naztec

The Ohio State University

Cemex

TEN, LLC

Packet Forensics

Prisma Technologies Corporation and Scale Capital

PLC Power

JP Morgan Chase

U.S. Dept. of Energy

Consolidated Nuclear Security, LLC

Altair

Mertech Data Systems

Microsoft

Google

IBM

Intel

Lockeed

Florida Power & Light

BAE

Nexter

AWS

Cisco

Tesla

Space X

Meta

Twitter

CESI

# Student Success

## BAE Systems Think Tank Award

### *The Story of the team:*

Our team met as we worked together on the Executive Board for IEEE Student Branch at FIU through this organization we were able to take the existing knowledge we all had in computer engineering and grow it outside the classroom working on robot frames together we learned about the design, prototyping, and manufacture of the robot frames that we still use at IEEE to help educate future engineers through FIU's Engineers on Wheels a program that was started to help us prepare the next generation and encourage them into STEM. The three attended an event held at FIU last year with BAE Systems. During this event, we got to meet the team from BAE systems and formed the group that would go on to win second place in the BAE Systems Think Tank competition and started working on the idea.



The picture is of our team with the robot frame another of our colleagues prototyped for his senior design and for the IEEE Region 3 hardware competition. We have the commercial products that inspired our ideas, aerial drones, autonomous systems that have manipulators, robotic cars, and as well the electric vehicle (Tesla Model Y) that could be modified to house and deploy robotic systems. For the white paper, we envisioned BAE systems CV 90 a heavily armored combat vehicle being modified with non-commercial versions of these robotics as well as supporting equipment to bring about the Armored Drone Carrier that was the focus of our white paper as well as the additional combat vehicles that could be improved with robotics and electronics of today.

### *Jose Cosio Santalla*

I have a Bachelor's in Computer Engineering from FIU, and I am pursuing a master's in Electrical Engineering at FIU. I am also a researcher at FIU part of Dr. Deidra Hodges research team is looking into the applications of perovskites for solar cells. I am a fellow of Fairchild and their innovation winner for 2022's Year 3 of the national competition Growing Beyond Earth where I prototyped an autonomous greenhouse for growing plants beyond Earth. I have also helped manage our autonomous system for our IEEE Region 3 hardware competition and am the VP of IEEE at FIU & president of panther robotics, along with leadership roles in other organizations at FIU such as SME, ASME, and SEDS.

### *Andrew Jameson Baad*

I am a senior undergrad Computer Engineer at FIU. I am also a research assistant at Dr. Finlayson's Cognac lab which studies computational narrative. I also work with the Asterisks program at FIU under Dr. Bhensali & Dr. Dong to develop machine learning techniques for the monitoring of the degradation of Proton Membrane Exchange Fuel Cells. I hold a bachelor's degree in philosophy and my interests are wide and varied but currently, my focus is on learning about AI, and additive manufacturing.

### *Alejandro Perez Pestana*

I am an undergrad Computer Engineering student with research experience in FIU Cyber Security Lab under Dr. Uluagac. With exposure to embedded programming, cyber security, software development, and machine learning. I am an active member of IEEE and part of the software development team for the IEEE SE hardware competition.





# Congratulations Class of 2022!

Engineering and computing graduates, it's time to turn your tassel to the other side! We proudly welcome you to a profession that is poised to offer the global community a promising future. You will have the technical ability and social consciousness to make the best possible decisions in your profession by fulfilling the creed, pledge, and code of ethics you have accepted at your Induction Ceremony held over the weekend. Make us proud!





# Faculty Service and Awards



**Dr. Shekhar Bhansali**

Elected 2023 Fellow by IEEE for contributions to portable real-time sensing devices for continuous monitoring

Elected Honorary Fellow by the International Society for Energy, Environment and Sustainability

2020 Faculty Convocation Award



**Dr. Kemal Akkaya**

Elected 2023 Fellow by IEEE for contributions to routing and topology management in wireless ad hoc and sensor networks

Faculty Convocation 2020 Award

2020 Faculty Research Award



**Dr. Osama Mohammed**

Named 2021 National Academy of Inventors Fellow



**Dr. Deidra Hodges**

Service as chair for Florida International University - Electrical & Computer Engineering

Award of Recognition from FIU Office to Advance Women, Equity & Diversity (AWED)

IEEE Senior member



**Dr. Alexander Pons**

2021 Faculty Teaching Award



**Dr. Selcuk Uluagac**

2021 Faculty Teaching Award



**Dr. Elias Alwan**

2020 Faculty Research Award



**Dr. Stavros V. Georgakopoulos**

Receiving the DURIP awards on Sub -THz and THz Network Analyzer Modules for Research on 5G Communications and Remote Sensing

# ECE Staff



**Ms. Xiang Li** has been the Lab Manager (Level-2) of the ECE department for more than 18 years. She is employed in the role of AFSCME employee. She used to work for Acer and Alienware, two major global computer manufacturers, as a Senior Engineer, Lab Manager, and Laptop Development Manager for 11 years, and she specialized in product development, multiple functions, and technical training. She is in charge of the management, maintenance and upgrading of lab equipment. She is also our ECE webmaster for two web design systems, she keeps our website always up-to-date, professional, and user-friendly. She is the ECE media support, big poster designer, in charge of poster print, and design SDII moves for the department.



**Ms. Layla ElHilu** is a Program Specialist working for the School of Electrical, Computer and Enterprise Engineering. She provides administrative support to the Graduate Program Director for the M.S. programs, distributes information, She manages the M.S. in Network Security program working closely with the Program Director for the program, FIU Online, and the Division of External Programs for the College of Engineering and Computing to hold monthly information webinars, enroll students in courses, and interacts as a liaison between students and various University personnel to communicate on a variety of logistics and resolving problems when it pertains to students. She also assists the ECE department with processing travel arrangements, travel reimbursements, requisitions, purchasing and assisting graduate students by addressing their questions and concerns.



**Gilda Castillo, Program Specialist**

Gilda provides secretarial and administrative support to the Chair and Department leadership. Serve as a point of contact to faculty and students to assist them with their needs. Prepare monthly reconciliation, provide details on transactions as needed for account reconciliation, budgeting, and reporting purposes, create purchase requisitions in People Soft, tracks purchase orders and confirm for payment to vendors. Prepare Schedules travel arrangements for the Department. Prepare agendas, flyers for seminar speakers, help the designated School Events Liaison with the preparation of School and College-wide events, such as the Senior Design Expo, Induction, and others. Maintains Department office supplies inventory and processes office supplies orders, Obtain & collect Master graduate information data, and answer phone calls.



**Ana Munoz, Program Specialist**

Assist Faculty and students with their needs. Create Purchase requisitions or purchase items needed for a project. Input Invoice information into FIU system for payment. Prepare Travel Authorization Requests, Agendas, Expense Reports, Monthly Reconciliation and Credentialing Requests. Disseminate, obtain & compile PH-D graduate information data. Transfer of Charges, and answer phone calls.



**Luisa Ruiz** serves as the Program Manager for the School of Electrical, Computer and Enterprise Engineering. She works closely with the school Director to establish goals, priorities, and strategies for the school's two departments future growth.

Ms. Ruiz assists the ECE department with travel arrangements, travel reimbursements, requisitions, procurement, financial activities, and assists the department's Graduate Program Directors with preparation and information as needed as well as responding to potential future student inquiries. She is responsible for managing all things related to students on graduate assistantships including issuing offer letters, providing paperwork for students to complete their onboarding, submitting contracts, assisting with holds and enrollment, and ensuring that students questions and concerns are addressed.



# New Faculty members



**Himanshu Upadhyay, Ph.D.**

**Research Interests:** Artificial Intelligence, Machine Learning, Deep Learning, Big Data, Visualization, Cybersecurity, Advanced Cyber Analytics, Memory Forensics



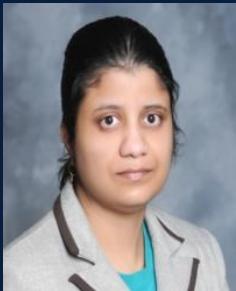
**Ahmed Ebrahim, Ph.D.**

**Research Interests:** Power Electronics Control, Renewable Energy Integration, Smart Grid, Energy management, Grid-Connected converters, and Electrical Drive Applications.



**Satheesh Bojja Venkatakrishnan, Ph.D.**

**Research Interests:** In-band full duplex techniques, Interference Mitigation, wireless communications, remote sensing, and bio-medical sensing and systems



**Mandrita Banerjee, Ph.D.**

**Research Interests:** Hardware-assisted security of processor and IoT security



**Konstantinos Zekios, Ph.D.**

**Research Interests:** Theoretical & computational electromagnetics, Antennas, Microwave engineering



**Stavros Koulouridis, Ph.D.**

**Research Interests:** Antenna Design, 5G Antennas, Implantable Antennas, Wireless Harvesting, Medical Applications of Microwaves

# Faculty Research Interests



**Malek Adjouadi**  
**Research Interests:** Image Processing, Neuroimaging, Machine Learning and Assistive Technology



**Kemal Akkaya**  
**Research Interests:** Network Security, Internet of Things, Cyber-Physical Systems Security, Blockchain



**Mohammad Shah Alam**  
**Research Interests:** Wireless Communication and Networking, Internet of Things, Grid Modernization



**Elias Alwan**  
**Research Interests:** Antennas, RF System, Millimeter-wave, Secure 5G Communication Systems



**Jean H. Andrian**  
**Research Interests:** Application of Category Theory on Modeling Complex Systems



**Wilmer Arellano**  
**Research Interests:** Electronic Design, Vehicular Ad Hoc Networks (VANETs), VANET Simulations



**Ou Bai**  
**Research Interests:** Autonomous Systems, Robotics, and Control, Biomedical Sensors, Signals, and Systems



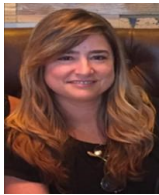
**Armando Barreto**  
**Research Interests:** Digital Signal Processing and Image Processing



**Shekhar Bhansali**  
**Research Interests:** Micro/Nanotechnology with a Special Interest in Biomedical Sensors



**Amaury Caballero**  
**Research Interests:** Electrical Communication, Control Systems, Construction Management



**Mercedes Cabrerizo**  
**Research Interests:** Signal and Image Processing



**Gustavo Chaparro-Baquero**  
**Research Interests:** Computer Organization and Architecture, Real-time Systems and Applications, Embedded Systems



**Hai Deng**  
**Research Interests:** Networking Communication, Radar Signal Processing, MIMO Radar, and Radar Networks



**Yu Du**  
**Research Interests:** Wireless Communication, Internet of Things, Engineering Education



**Ahmed Ebrahim**  
**Research Interests:** Power Electronics Control, Renewable Energy Integration, Smart Grid, Energy management



**Juan Farah**  
**Research Interests:** Real Time Transmission System Contingency Analysis, Transmission Constraints and Bulk Energy Management Systems



**Trina Fletcher**  
**Research Interests:** Data science, longitudinal analysis, DEI in engineering and computing education



**Luis Galarza**  
**Research Interests:** Image Processing, Signal Processing, System Design



**Stavros V. Georgakopoulos**  
**Research Interests:** Origami Antennas, Wireless Power Transfer, Wearable Antennas



**Mehdi Hatamian**  
**Research Interests:** CMOS Integrated circuits and SoC systems, Biomedical electronics, and cancer screening technologies



**Deidra Hodges**  
**Research Interests:** Quantum Circuits, Optoelectronic Devices, Photovoltaics and Radiation Detectors



**Ahmed Ibrahim**  
**Research Interests:** Wireless Communication and Networking with Emphasis on Millimeter Wave and Vehicular Communications



**Seng Hong**  
**Research Interests:** Antenna Array, Radar Systems, Electronic Warfare Technology



**MD Shafiul Islam**  
**Research Interests:** Artificial intelligence, robotics, embedded system, FPGA, DSP, renewable, and biomedical engineering.



**Stavros Koulouridis**  
**Research Interests:** Antenna Design, 5G Antennas, Implantable Antennas, Wireless Harvesting, Medical Applications of Microwaves





**Aleksandr Krasnok**  
**Research Interests:** Photonics, Quantum Optics, Quantum Physics



**Grover L. Larkins**  
**Research Interests:** R&D of Cryogenic Communications Systems intended for space-based applications



**Arjuna Madanayake**  
**Research Interests:** Multidimensional Signal Processing, Antenna Array Processing and Phased-array Technologies



**Osama A. Mohammed**  
**Research Interests:** Solving the Smart Grid Operation and its Communication



**Mubarak Mujawar**  
**Research Interests:** IoT, Wearable Sensors, Nanofabrication, MEMS, Engineering Education



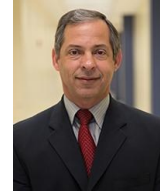
**Nonnarit O-Larnnithipong**  
**Research Interests:** Digital Signal Processing, MEMS Inertial Sensors, Human-Computer Interactions



**Nezhil Pala**  
**Research Interests:** Integrated Nanotechnology and Biotechnology



**Sumit Paudyal**  
**Research Interests:** Power and Energy Systems, Smart Grid, Cyber-Physical Systems



**Alexander Pons**  
**Research Interests:** Cybersecurity, IoT, Networking and Embedded Systems



**Vladimir Pozdin**  
**Research Interests:** Wearable Health Monitoring In-situ Sensing Organic Electronics Flexible Inorganic Devices



**Gang Quan**  
**Research Interests:** Real-time computing system design, advanced computer architecture, cloud computing



**Mohammad Ashiqur Rahman**  
**Research Interests:** Security and Resiliency Analysis and Design, Cyber-Physical Systems/Internet of Things, Computer Networks



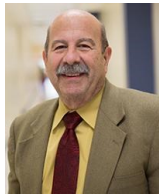
**Md Tausidur Rahman**  
**Research Interests:** Hardware Security and Trust, Emerging Memory Technologies, Reliability



**Pulugurtha Markondeya**  
**Research Interests:** Electronic and bioelectronic systems, RF/5G Components



**Reynaldo Max Padro**  
**Research Interests:** Engineering Entrepreneurship



**Gustavo Roig**  
**Research Interests:** Engineering Education, Human Potential Development



**Matthew Ruddell**  
**Research Interests:** Practical applications of Digital Forensics



**Arif I. Sarwat**  
**Research Interests:** Smart Grids, Smart Cities, High-penetration Renewable Systems, Microgrid, Critical Infrastructure, EV and Security



**Mst Shamim Ara Shawkat**  
**Research Interests:** VLSI Circuit Design, Neuromorphic Computing Hardware, Photodetector design, Integrated Smart Sensors for Biomedical Applications



**Jayesh Soni**  
**Research Interests:** Artificial Intelligence and Cyber Security



**Atoussa H. Tehrani**  
**Research Interests:** Computer Architecture, Embedded Systems, Data Communications



**A. Selcuk Uluagac**  
**Research Interests:** Cybersecurity, Security of IoT, Security of Cyber-Physical Systems



**Himanshu Upadhyay**  
**Research Interests:** Artificial Intelligence, Machine Learning, Deep Learning, Big Data, Visualization, Cybersecurity, Advanced Cyber Analytics, Memory Forensics



**Frank Urban**  
**Research Interests:** Ellipsometry; Beta Gallium Oxide Endocrinology; Cortisol Modeling Biomechanics; Fatigue Modeling



**Rafael Soltero Venegas**  
**Research Interests:** Engineering Entrepreneurship



**Yuri Vlasov**  
**Research Interests:** Solid State Physics, MEMS, Sensors, Nanotechnology



**John Volakis**  
**Research Interests:** RF/Electromagnetics, Medical Sensing, Antennas & Communications



**Herman Watson**  
**Research Interests:** Embedded Systems, ARM, Biomedical Sensors



**Subbarao Wunnava**  
**Research Interests:** Data Communication and Networking, VLSI



**Kang K. Yen**  
**Research Interests:** Control Systems and Cyber-Physical Systems



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Department of Electrical and Computer Engineering  
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