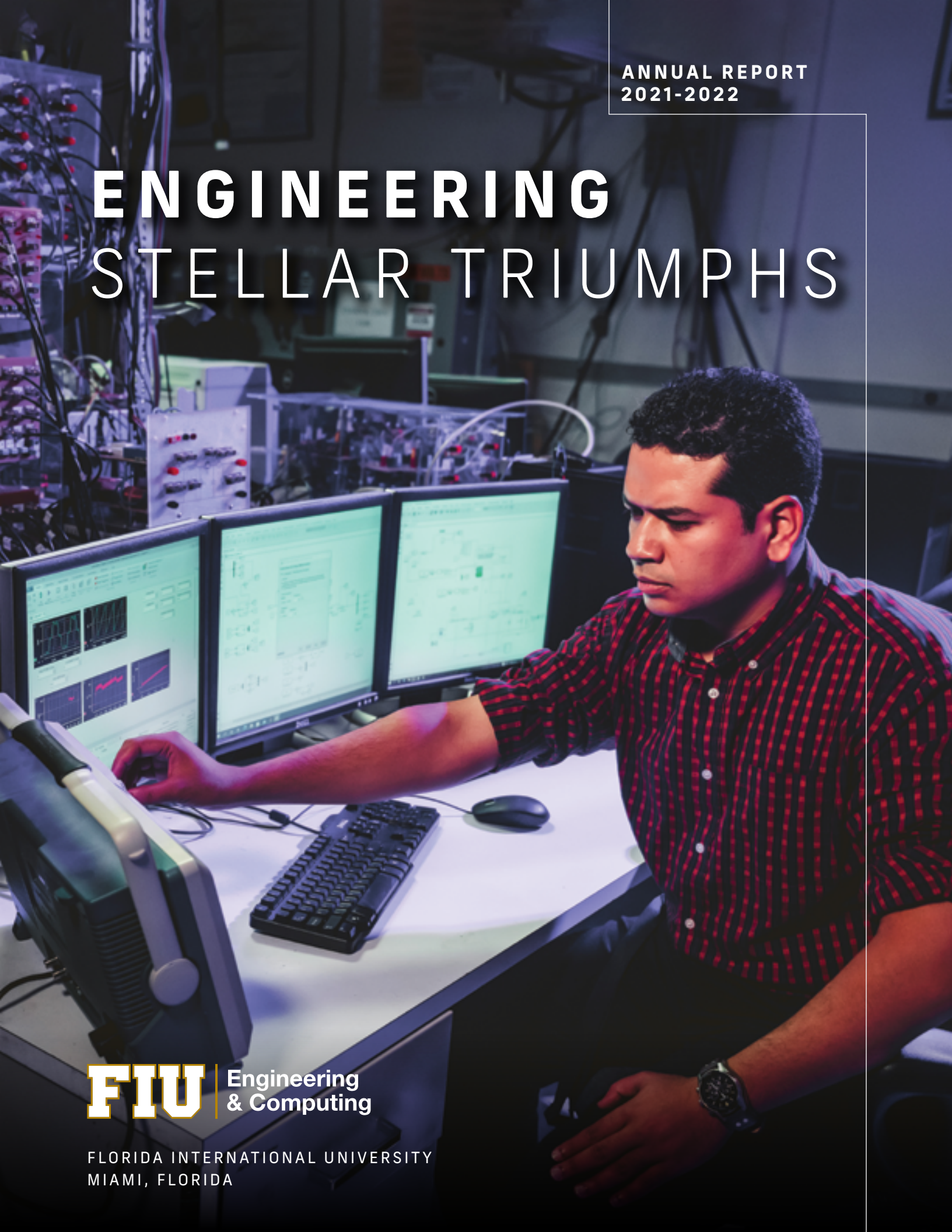
ANNUAL REPORT
2021-2022

ENGINEERING
STELLAR TRIUMPHS



FIU | Engineering & Computing

FLORIDA INTERNATIONAL UNIVERSITY
MIAMI, FLORIDA

GROWTH. TRIUMPH. INNOVATION.

The FIU College of Engineering and Computing is South Florida's leading engineering education resource. Within these pages, we highlight some of our achievements of 2022. We are a top engineering college within a vibrant, student-centered public research university committed to learning, research, entrepreneurship, innovation and creativity that prepares graduates to succeed in a global market.

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On the left: Kazue Orikasa Lopez, works to invent new materials to transform cardiovascular care and help NASA function better in aerospace. With the National Science Foundation Nanosystems Engineering Research Center Cellular Metamaterials project, she helped develop new ways to create artificial human cells to repair the heart. Orikasa Lopez landed a NASA internship, where she worked on developing advanced materials for aerospace applications and is a co-inventor on a patent related to that research.

DEAN'S MESSAGE

On behalf of our faculty and staff, it is my pleasure to showcase throughout these pages the extraordinary growth and triumphs our college experienced in 2022. Our college is a leading education and research resource in engineering and computer science in South Florida, dedicated to the success of our exceptional faculty and students.

We thrive for academic excellence in a highly diverse and inclusive environment, and we're committed to top research and transformational innovation. We are a college of 8,300 engineering and computer science students, with more than 1,200 master's and Ph.D. degree students. In lockstep with Miami's unprecedented rise as a tech mecca, our college continues to experience growth in enrollment year after year.

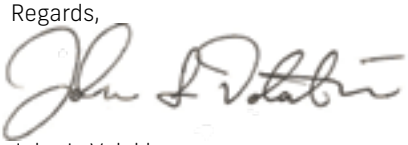
We award more engineering and computing degrees to Hispanics than any other school in the nation. Our students engage in impactful research and industry collaborations at the epicenter of technologies that drive innovation in information sciences and cybersecurity, bioinformatics and biodevices, infrastructure and resilience and renewable energy, just to name a few. Upon graduation, our students are securing rewarding jobs with top global employers such as Amazon, Lockheed Martin, Google, JP Morgan, FPL, Boeing, Microsoft, Apple and Northrop Grumman.

In recent years, our college has more than doubled its research expenditures. The number of patents awarded to faculty surpassed 40 for five consecutive years, helping FIU rank among the top 20 U.S. public universities for patents worldwide, according to a report released by the National Academy of Inventors and the Intellectual Property Owners Association.

Engineering and tech innovations in manufacturing, health, data sciences, artificial intelligence, and wireless communications continue to affect our daily lives more than ever. Our college has the momentum to prepare students to contribute towards these rapidly evolving areas.

Our top priority is to produce a dynamic and sustainable workforce of highly-skilled engineering professionals, prepared to make impactful contributions to industries of today and tomorrow.

Regards,



John L. Volakis
Dean, College of Engineering and Computing
Professor, Electrical & Computing Engineering Department
USNC-URSI Comm B Chair
https://volakis.eng.fiu.edu

ABOUT THE COLLEGE

STUDENT PROFILE

8,200+
Students
(7,041 undergraduate, 1,258 graduate students)

17%
First generation undergraduates

22%
Female
(21% undergraduate, 28% graduate)

61%
Hispanic
(66% undergraduate, 37% graduate)

DEGREES OFFERED AND AWARDED

We award more undergraduate engineering and computing degrees to Hispanics and minority students than any other college in the nation.

14
Undergraduate
16 master's and 7 doctoral degree programs

Nearly
2,000
Engineering and computer science degrees awarded in AY2022
(Summer 2021, Fall 2021 and Spring 2022)

+1,500 undergraduate / +350 master's / 54 doctoral

FACULTY, RESEARCH AND INNOVATION

$52M in annual research expenditures; $320K per faculty

$187M in active research projects

45 patents issued in 2021

50 research laboratories, centers and institutes

24 faculty with NSF CAREER Awardees, 4 IEEE Fellows, 5 AAAS Fellows, 4 AIMBE Fellows, 8 NAI Fellows

RANKINGS
(TOP 50)

Best Program (Public Institution) Rankings

#27-35
Telecommunications Engineering
(Academic Ranking of World Universities)

#37
Best Online Master's Engineering Program
(US News)

#40
Engineering & Technology
(QS World)

#31-40
Engineering & Technology
(Times Higher Education World)

#38-43
Electrical and Electronic Engineering
(QS World)

#41-44
Computer Science and Information Systems
(QS World)

#42
Electrical and Electronics Engineering
(US News Global)

#39-48
Mechanical Engineering
(QS World)

#38-42
Computer Science
(Times Higher Education World)

FIU'S RESEARCH FOR NASA

BLASTS OFF

Since 2018, NASA has invested millions of dollars in the College of Engineering and Computing to generate research, technology and talent.

FIU's NASA research activities are contained within CRE2DO, M-STAR and other programs.

THE NEW AGE OF SPACE EXPLORATION HAS COMPLICATED CHALLENGES. FIU IS RESEARCHING REAL SOLUTIONS.

CRAFTING STATE-OF-THE-ART SOLAR PANELS FOR THE MOON

Professor Daniela Radu and Professor Cheng-Yu Lai are researching lightweight and ultra-efficient solar panels to supply NASA with renewable power options for future lunar habitats. Professor Radu is using two-dimensional nanomaterials, substances with unique properties, to create solar-ray absorbers as thin as a billionth of a meter wide. To efficiently and securely capture the solar energy, Professor Lai is making nanomaterial semiconductors for enhancing the power conversion efficiency of the panels. The resulting technology aims to capture power at twice the efficiency of today's commercially available solar panels.

SHIELDING TECHNOLOGY FROM THE HARSH RADIATION OF SPACE

Professor Arvind Agarwal and his research team in Plasma Forming Laboratory have developed a new coating to protect machinery for use on the lunar surface — think rovers and excavators — against radiation levels up to 1,000 times greater than on Earth. This fall, a sample of the coating is heading to the International Space Station, where it will be mounted to a platform outside the facility for exposure to space. The coating will then be analyzed for its resistance to radiation. NASA expects the test's findings will help the agency reduce service and repair needs.

"I THINK THE MOST IMPORTANT THING WE ARE CONTRIBUTING TO NASA IS THE HUMAN POTENTIAL."

— Professor Daniela Radu

Since 2018, **20 students have gone on to intern at NASA** and **70 students are working on NASA** research at FIU.

CREATING POWERFUL AND PRACTICAL COMMUNICATION TECHNOLOGY

College of Engineering and Computing Dean John L. Volakis is researching communication and image visualization technologies. The FIU professor is designing foldable antennas arrays which will occupy minimal room on a spacecraft and unfold to send and receive signals. Volakis is also investigating large-bandwidth technologies, which make it easy to send and detect low signals, and wearable communication devices, which will help astronauts transfer information while their hands are busy.

BOOSTING THE NEXT WAVE OF ELECTRONICS MANUFACTURING

Professor Cheng-Yu Lai has received a grant to train students in creating additively manufactured electronics. These electronics are 3D-printed layer by layer to form lightweight and complex designs. Funding will allow FIU to acquire a tool which enables the printing and the mass production of advanced circuit boards. The initiative is projected to be vital to the space agency as the U.S. looks to produce more electronic components domestically. As part of the grant, four students will intern at NASA every summer working on aeronautics and FIU will team up with industry partners to support their electronic components designs.

PROTECTING FUTURE RESIDENTS OF THE MOON FROM "BAD ACTORS"

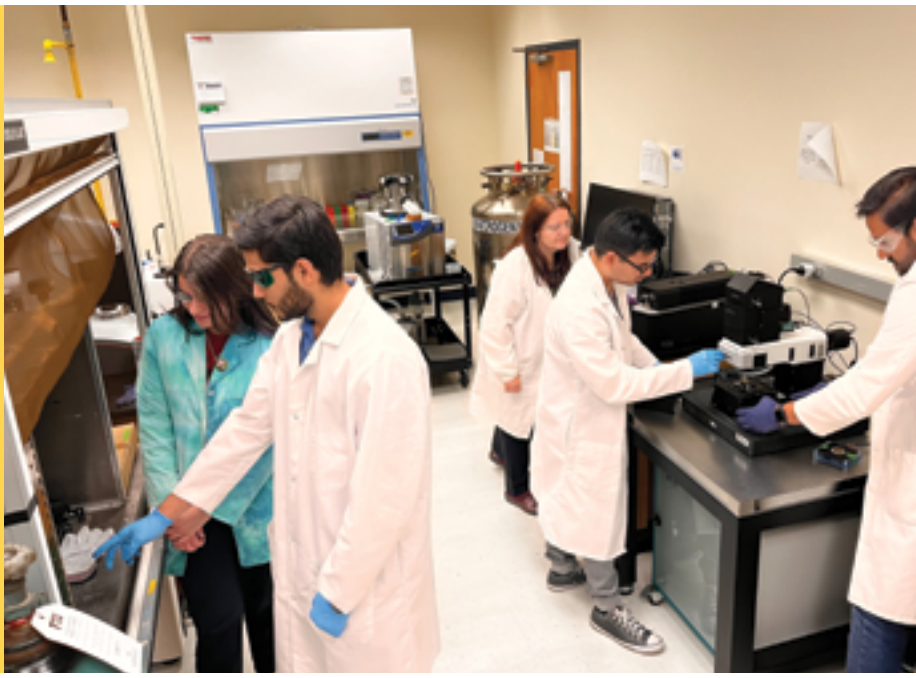
Associate Dean Osama A. Mohammed and a team of FIU researchers from the Energy Systems Research Laboratory are working to ensure that the lunar base planned for the Moon under the Artemis Program has secure power. Professor Mohammed is working on a cybersecurity framework to ensure that the individual parts of the habitat (think houses) can request power from each other safely. These habitats will likely all have their own power supplies and occasionally need to request energy from each other to perform a task, such as operating a machine. Professor Mohammed's cybersecurity technology seeks to keep these communications from being intercepted.

RESEARCH
STORIES FROM 2021-2022

As a comprehensive public research university, FIU is providing excellence in education and engaging in impactful, multidisciplinary research. FIU is one of the fastest-growing public research universities in the United States. The College of Engineering and Computing more than doubled its research expenditures over the last five years, and we are continuously climbing in the rankings. In 2021-2022, the college secured 45 patents, helping to rank FIU #42 worldwide for U.S. patents issued.

"NSF PREM for Innovations in Materials, Processes, and Applications for Quantum Technologies (IMPAQT)." Daniela Radu has received a $3.7M National Science Foundation PREM grant to develop new 2D materials and processes that can be transformative in the field of quantum science and ensuring long-term 2D resilience in future quantum devices.

Left to right: Graduate students Faizan Syed and Melissa Venedicto using a laser to create new patterns for solar device fabrication, and graduate students Roberto Prado-Rivera and Rishabh Sahani analyzing most recent solar devices by spectroscopy, assisted by Radu.



LISTENING, LEARNING AND IMPROVING OUR WORLD:

Head of NSF's Directorate of Engineering discusses diversity and research at FIU – Susan Margulies, head of the National Science Foundation's Directorate of Engineering, led a discussion at the College of Engineering and Computing about diversity and inclusion in education and research.

FEMA announces national initiative to modernize building codes at FIU Wall of Wind – With FIU's Wall of Wind as a backdrop, Federal Emergency Management Agency Administrator Deanne Criswell announced a new initiative to modernize building codes, improve climate resilience and reduce energy costs. This initiative will help state, local, tribal, and territorial governments adopt current building codes and standards, enabling communities to be more resilient to hurricanes, flooding, wildfires, and other extreme weather events that are intensifying due to climate change.

"Mid-scale RI-1 (M1:DP): National Full-Scale Testing Infrastructure for Community Hardening in Extreme Wind, Surge, and Wave Events (NICHE);" Arindam Chowdhury is leading a $12.8M, four-year cooperative agreement with the National Science Foundation (NSF) to design a unique, national-scale, multi-user facility to study the impact of extreme winds, storm surge and waves on different types of civil infrastructures.

RESEARCH
STORIES FROM 2021-2022

"Consortium for Research and Education in Power and Energy Systems (CREPES) for Sustainable STEM Workforce;" With a $3M, three-year grant from the U.S. Department of Energy awarded to three Minority Serving Institutions (MSI) and two National Nuclear Security Administration (NNSA) Labs, Sumit Paudyal at FIU is building a sustainable pipeline of highly trained electrical engineers to form a National Security Enterprise (NSE) workforce.

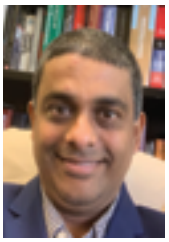
"Advancing High Deposition Rate Additive Manufacturing Materials and Technologies" Arvind Agarwal is using a five-year grant to collaborate with the U.S. Army Combat Capabilities Development Command Army Research Laboratory in support of the Army's modernization strategy by enabling the research necessary for the development of next-generation materials and manufacturing processes.

"Targeting the Caveolae-Dependent Mechanism of Calcifying Extracellular Vesicle Formation;" Using a $1.8M, five-year National Institute of Health grant, Josh Hutchenson is studying the ways in which chronic kidney disease causes heart disease and how we might be able to treat it with currently approved drugs.

STANDOUT PATENTS

Chunlei Wang
Nezih Pala
Omena Okpowe

Glass Scintillators and Methods of Manufacturing the Same
3D printing of glass for optical applications, such as glass-based scintillators.



Sharan D. Ramaswamy
Brittany Gonzalez
Ariadna Herrera
Alexander Williams

Materials and Methods for Accelerating Cardiovascular Tissue Regeneration
A procedure that increases the biocompatible elastin-content in constructs, which enable accelerated and complete cardiovascular tissue regeneration for the treatment of heart diseases.

Armin Mehrabi
Mohammad Abedin

Structural Joint Damage Detector Tool
A software tool and methodology for detecting damage and deterioration of structural joints as critical elements of the existing buildings and bridges with the purpose of preventing catastrophic events.

Raju Rangaswami
Adnan Maruf
Ashikee Ghosh
Janki Bhimani

Machine Learning Based Tiered Memory Systems and Methods
A low-cost and low power-consuming yet high-performance hybrid memory system composed of dynamic random-access memory (DRAM) and byte-addressable persistent memory.

FIU AMONG TOP 50 U.S. PATENT PRODUCERS IN THE WORLD:

FIU is ranked 20th in the nation among public universities and 42nd globally in new utility patents issued.

62
University Patents

45
College Patents

Selcuk Uluagac
Kemal Akkaya
Michael Thompson
Suat Mercan
Mumin Cebe

A Cost-efficient IoT Forensics Framework with Blockchain
This invention enables efficient storage of critical information coming from remote sensors or IoT devices for provenance and digital forensics investigations.

Kemal Akkaya
Mumin Cebe

Systems and Methods for Authentication and Key Agreement in a Smart Grid
This invention enables the creation of necessary keys for ensuring security and authentication among intelligent devices in a severely constrained bandwidth environment such as a smart grid.

FACULTY TRIUMPHS
CHANGING THE WORLD FOR THE BETTER

Jessica Ramella-Roman

Elected Senior Member of Optical Society of America

Ramella-Roman, who is also an associate research professor at the Herbert Wertheim School of Medicine, developed a system that uses light to examine the composition and structure of cervical tissue in order to measure preterm labor risk. Ramella-Roman's biomedical engineering research is focused on biophotonics.

Osama Mohammed

Named 2021 National Academy of Inventors Fellow

Mohammed is credited with establishing the mainstream analysis methods for computational electromagnetics and developing breakthrough designs and controllers for electric machines and drives. He also is credited with making great contributions to the enhancement of innovative power electronics architectures and switching techniques, transportation electrification and smart grid communications and cyber security. He is one of the most referenced researchers in engineering and computer science.

Shekhar Bhansali

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

Bhansali joined FIU in 2011 and served both as a department chair and interim director of the School of Electrical, Computer and Enterprise Engineering. His main research interests are in nanotechnology, biosensors and microfluidics. He holds 40 patents, has published more than 300 publications and has advised more than 40 doctoral students and postdoctoral fellows in research.

David Garber

Received the 2021 Educator of the Year award from the Precast/Prestressed Concrete Institute

Garber joined FIU in 2014 and has since led many large-scale experimental and analytical research projects related to precast, prestressed concrete and accelerated bridge construction. He has also facilitated and organized numerous educational outreach activities, including summer camps for elementary school students and parents, teacher workshops and events with a local public library system.

Christian Poellabauer

Received the IEEE Computer Society Distinguished Contributor Award

Poellabauer directs FIU's MOSAIC (Mobile Sensing and Analytics) Lab, which focuses on developing novel personal, social, and crowdsensing solutions, primarily in the healthcare field. He has developed various solutions using mobile devices, wearables, and virtual assistants for the diagnosis of concussions, the rehabilitation of amputees and stroke survivors, the monitoring of the progression of neurological conditions and the detection of depression in college students and PTSD in first responders.

Arvind Agarwal

Elected to the rank of Fellow of the American Association for the Advancement of Science

Agarwal's research interests include nanocomposites and coatings, thermal spray, surface engineering, nanomechanics and nanotribology, bioceramic coating, nanomechanics of biological cells and spark plasma sintering. He holds 10 U.S. patents. Last year, Agarwal received a five-year, $22.9 million grant from the U.S. Army to advance additive manufacturing technologies that aid in the repair, design and durability of high-performance materials used to manufacture next-generation vehicles and munitions.

Mark Weiss

Received the ACM Karl V. Karlstrom Outstanding Educator Award for advancing the art and science of computer science education

Weiss's most significant contributions to the evolution of the data structures and programming curriculum have been through his textbooks, which have been used in numerous countries and published in multiple editions over three decades. Per opensyllabus.org, he is one of the most widely adopted textbook authors in computer science. Notably, he has also been a champion for increasing diversity in the computing field, especially through partnership programs with other universities in the state of Florida.

Berrin Tansel

Elected to the Turkish Science Academy

Tansel has made countless distinguished contributions in the field of environmental research, particularly for development of innovative processes for water treatment and waste management to reduce pollution loads in coastal systems. Tansel's transformative, theoretical and experimental research includes effectively removing oil and oil particles from water. Her research has also been used in the development of hands-on activities that have been integrated to the science curriculum in some middle and high schools as multi-disciplinary science learning modules on coastal ecosystems. Her research has also been used in the development of hands-on activities that have been integrated to the science curriculum in some middle and high schools as multi-disciplinary science learning modules on coastal ecosystems.

HONORS TOTAL:

37
Fellows and senior members in professional societies

24
NSF CAREER Awardees

8
Members of the National Academy of Inventors

3
Members of the National Academy of Engineers

2
Test of Time Awards

OUR STUDENTS ARE MAKING A REAL IMPACT REIMAGINING THE FUTURE TODAY.

CAMPUS RAINWORKS CHALLENGE

FIU TEAM WINS NATIONAL EPA CAMPUS RAINWORKS CHALLENGE

South Floridians know the problems that come with climate change, sea-level rise and extreme weather events. A team of FIU engineering and architecture students is tackling the issues with innovative solutions and, in the process, receiving accolades. The group won first place in the U.S. Environmental Protection Agency's (EPA) 2021 Campus RainWorks Challenge, Demonstration Category.

ENGINEERING STUDENTS' SEAWATER BATTERY PROJECT WINS FIRST AT GO GREEN NORTH AMERICA

Seniors **Amanda Perez**, **Alexandra Berkova** and **Ana Claus** are innovating a way to alleviate lithium demand. These three mechanical engineering students are prototyping a seawater battery that would operate using sodium, a metal that can be pulled from the ocean's sodium chloride molecules. The sodium would replace lithium in these batteries. This seawater battery design earned first place at Schneider Electric's Go Green for North America, a continent-wide clean energy competition.

MEET SGA PRESIDENT CHRIS LUGO, COMPUTER SCIENCE MAJOR AND INTERNATIONAL STUDENT

Cris Lugo understands the education gap caused by a lack of technology. Born in the Dominican Republic and raised in the Turks & Caicos Islands, there were no computers in his home. Now he hopes to combine his experience as the first international student ever to be chosen president of the Student Government Association (SGA) — and to sit on the Board of Trustees — with his computer science major to solve a worldwide problem. Lugo obtained his AA degree in computer science at Turks & Caicos Islands Community College (TCI), where he was honored with the Outstanding Performance award. He was also the school's SGA president.

ALDO AMENTA WALKS ACROSS COMMENCEMENT STAGE FOR HIS MASTER'S

Aldo Amenta became paralyzed several years ago just as he was starting his career at Florida International University. Undeterred, he continued his studies and in 2018 made international news when he walked across the commencement stage using an exoskeleton to receive his bachelor's degree from FIU's College of Engineering and Computing. On Dec. 12, 2021, he did it again and graduated with a master's degree in biomedical engineering from FIU. Aldo hopes to enter the biomedical industry to help others like him suffering from a severe spinal injury. He also hopes to pursue a Ph.D.

STUDENT BUILDS PLASTIC MATERIALS TO PROTECT TECHNOLOGY IN SPACE FROM RADIATION

Through a NASA research fellowship, Ph.D. student **Kazue Orikasa** is working on a way to make strong plastic-based materials with high thermal stability that can withstand extreme radiation. Her plan is to combine plastics with nanomaterials to make a combined material known as a composite. These composites could be used to shield electronics from radiation exposure, which can interrupt signal processing. Orikasa's research is being tested at a NASA radiation testing facility.

AT-HOME TEST COULD PICK UP THE 'SOUND' OF HEART DISEASE

Imagine if you could hold a stethoscope to your heart and find out with almost 90 percent accuracy if you were developing heart disease. Ph.D. student **Valentina Dargam** is working on a method to do just that. Dargam is working on an algorithm that can differentiate the sounds of a healthy heart and one that is developing disease with high accuracy. She is currently testing the algorithm on mice and finding proof that in fact it works and can revolutionize cardiac care in the future.

FACT AND RANKINGS

#1
in the Nation for Bachelor's Degrees Awarded to Hispanics

#5
in the Nation for Bachelor's Degrees Awarded to Blacks/ African Americans

#30
in the Nation for Bachelor's Degrees Awarded to Women.

#15
in the Nation for Undergraduate Engineering Enrollment

INDUSTRY PARTNERSHIPS

Industry partners are critical to the College of Engineering & Computing's efforts to graduate professionals who are ready for the world that awaits them. Below are just a few of the valued partners collaborating with us to educate students who are positioned to make an impact in today's workforce.

KASEYA IS HELPING TO BUILD MIAMI'S TECH WORKFORCE

Kaseya is one of the hottest tech companies to work for right now and has partnered with FIU to create a workforce pipeline and ensure graduates are entering the workforce with the skills needed to succeed on the job. Most recently, Kaseya participated in Florida International University's Senior Capstone in the College of Engineering & Computing. Members of Kaseya's leadership team mentored four teams, assigning them four real-world challenges to see how they'd go about solving them. The students even received the opportunity to have their ideas implemented within the company.

CONSTRUCTION TRADES PROGRAM HELPS UNDERSERVED MEMBERS OF THE COMMUNITY THRIVE IN THE WORKFORCE

An FIU program is opening career paths to lucrative jobs in construction safety management. The Certificate Program on Construction Trades at FIU's Moss Department of Construction Management has already changed many lives. The free program, funded by the Lennar Foundation, is designed to provide underserved members of the community with the skills needed to succeed in the construction industry—offering food, transportation and the opportunity to speak to employers.

REAL INNOVATION PRESENTED AT ENGINEERING AND COMPUTING SHOWCASE

An estimated 400 engineering and computing students, consisting of 135 teams, participated in a Senior Design Showcase, hosted by the College of Engineering & Computing. The students presented their team-based, senior projects to professors, recruiters, industry affiliates, peers and the community. The projects covered several engineering and computing disciplines and were highlights of engineering students' respective senior years. Industry giants like MITRE, Mastec, Blue Origin and Skanska have long supported the showcase.

PARTNERING WITH FIU FOR A MORE SUSTAINABLE ENERGY FUTURE

Located at FIU's College of Engineering and Computing – the FIU-FPL Solar Research Center is the only solar research facility of its kind that FPL has installed at a Florida university.

The 1.4-megawatt (MW) solar array comprises more than 4,400 solar panels on canopy-like structures that provide clean energy to the grid and shade for about 400 parking spaces. The unique solar array incorporates a 24-foot by 12-foot FIU logo that is visible from high above.

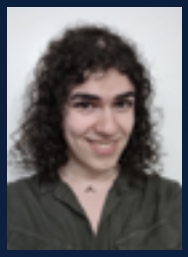
Engineering faculty and students from the EPS program at FIU are using the installation to conduct important research that is helping FPL advance solar energy in the state.

PANTHERS LEADING THE PACK AT TOP EMPLOYERS

From a software engineer who is catching glitches in one of the popular games in U.S. to a computer engineer who is being called a "game changer" at a global tech giant and a mechanical engineer who is working to enhance the continued exploration of the final frontier, Panthers are making a difference in the world we live in and beyond.

FIU TWIN GRADS *WIN INDUSTRY'S MOST PROMISING ENGINEER AWARD*

Identical twins Shalisha and Shonda Witherspoon are dual recipients of one of the computer engineering industry's most notable honors for young professionals — the Most Promising Engineer award. While at FIU, the two shared the Best Undergraduate Student of the Year award when they graduated with B.S. degrees in 2016. They went on to receive their M.S. from FIU in 2018. The Witherspoons are software engineers at IBM's T.J. Watson Research Center in New York, where they work on distributed artificial intelligence and machine learning projects. They credit FIU for providing them with the educational foundation and opportunities to succeed in the workplace.



AT MADDEN, FORMER FIU UPE LEADER PUTS COMPUTER SKILLS TO ACTION

Every Madden player knows the iconic introduction, "EA Sports, it's in the game!" But for May Márquez '20, MS '21, an EA Sports software engineer, it's more important what's not in the game. Márquez is a two-time computer science alumna who catches glitches in Madden. In a game as complicated as football, there are a lot of moving parts to monitor.

FROM COLOMBIA TO FIU TO NASA: *SARA RENGIFO'S JOURNEY TO BECOMING AN AEROSPACE ENGINEER*

With an undergraduate degree in mechanical engineering, Sara Rengifo came to the United States from Medellin, Colombia, hoping to start her career. Although she spoke no English and was told time and again that her degree was inconsequential here, she never gave up. Her determination led her to FIU in 2013 to pursue a master's degree in materials science. That move catapulted her to NASA, where today she is an aerospace engineer working in tribology and metrology.

GAME-CHANGER: *FIU CLASS PROJECT LEADS TO ENGINEERING CAREER AT TEXAS INSTRUMENTS*

Felipe Diaz-Cruz and his classmates shrank a Texas Instruments (TI) System from the size of an older PC to that of a home phone. His work caught the attention of TI recruiters. Today, Diaz-Cruz, is a rising star at TI in Dallas, Texas. He received a bachelor's '13 and master's degree '14 in electrical engineering, both from FIU.

FIU LIGHTS A FIRE ON THE NEW MIAMI TECH ECOSYSTEM

The university is a driver of the new South Florida tech boom. With a history of turning out highly qualified graduates who together have laid a foundation for the growing industry, FIU is redoubling efforts to meet the demands of an exciting, unprecedented era. Miami Tech, shorthand for a technology hub now in the making, has a buttress in the College of Engineering and Computing.

COMPUTING STUDENTS, ALUMNI INVIGORATED BY GROWING ATTENTION TO TECH-TALENT IN MIAMI

Though Miami's major industries continue to be tourism and finance, the city is emerging as an international tech hub. Talent cultivated locally sees this as an opportunity to spotlight the long-established successes of FIU students and alumni. The recent $10 million gift from the John S. and James L. Knight Foundation to FIU's School of Computing and Information Sciences further acknowledges the tech expertise at FIU ready to take the tech movement in Miami to the next level.

FIU PARTNERS WITH BREAK THROUGH TECH TO INCREASE DIVERSITY AND GENDER EQUALITY IN MIAMI'S TECH ECOSYSTEM

The university partnered with Break Through Tech to develop programs that will propel women and underrepresented communities into technology degrees, careers and leadership positions. Part of the Gender Equality in Tech (GET) Cities Initiative, this partnership also helps expand the talent pipeline that is infusing South Florida's burgeoning tech ecosystem. With more than 650 FIU undergraduate students earning degrees in computing annually and 75 percent of female computing students representing minority groups, FIU is the ideal host of the fourth Break Through Tech city in the nation.

"This is our moment," says John Volakis, dean of the college. "We realize that we have a responsibility to enable the Miami Tech movement, and we are taking that responsibility seriously."

DLC MEMBER SPOTLIGHT

MEET DANIEL SANCHEZ '07, VP FOR MOTOROLA SOLUTIONS' STATE & LOCAL GOVERNMENT DIVISION IN FLORIDA

Daniel Sanchez is making major strides at Motorola Solutions. Sanchez graduated from FIU with a MS in computer engineering in 2007. It was also at FIU that he received his BS in computer engineering two years earlier — both times graduating summa cum laude.

Today, Sanchez is Vice President for Motorola Solutions' State & Local Government Division in Florida, where he has made impactful contributions that have led to several promotions during his 15-year tenure with the company.

Sanchez started at Motorola as an intern during the summer of 2004. He evolved across various roles from software engineer to product manager and marketer to business development officer. The FIU alum ultimately became a vice president of sales.

In his current role, he leads a team of public safety technology consultants responsible for a combined annual business of more than $300M across the State of Florida.

Sanchez gives back to his alma mater by, among other things, serving as a keynote speaker at university events and through his active role in the Dean's Leadership Council.

"What you and I learned at FIU's College of Engineering & Computing was not industrial engineering, computer engineering, electrical engineering, biomedical engineering, etc.

What we learned was to become the world's greatest problem solvers. We have a ton of problems that need solutions, and that's what we're here to do."

**Sanchez during his keynote at a Spring 2022 commencement describes a conversation at Motorola Solutions with a fellow employee and FIU alum.*

MEET DARLENE FERNANDEZ '06, NEW EXECUTIVE DIRECTOR OF MIAMI-DADE EXPRESSWAY AUTHORITY

Fernandez is applying her engineering prowess and leadership skills to improve transportation in Miami-Dade County.

The Florida Department of Transportation (FDOT) and the Miami-Dade Expressway Authority (MDX) are combining resources to alleviate chronic traffic near downtown in Miami-Dade County. Alumna Darlene Fernandez '06 is the executive director of MDX. She is one of the leaders helping to make this project and a multitude of other transportation innovations around Miami-Dade County happen. She was hired as head of MDX in March, making her the first woman to hold the position.

In her role, Fernandez is responsible for some of Miami's greatest arteries of transportation. In addition to the Dolphins Expressway, MDX oversees State Road 112, which connects to Miami International Airport, and three other highways in Miami-Dade County.

When Fernandez began classes at FIU, she was a biology major who interned at a local hospital and wanted to work in medicine. After her freshman year, she decided she wanted to make a change and switched to the College of Engineering and Computing where she secured an internship at FDOT. It was the beginning of what has been a decorated career.

Over the last 20 years, Fernandez has worked in both the private and public sectors of transportation. Before her time at MDX, she spent seven years managing signals and signs maintenance and operations as well as traffic engineering design as an assistant director for Miami Dade County's Department of Transportation and Public Works.

Fernandez is excited about how MDX's expressways will innovate as Miami grows. Her team is preparing to adapt highways for not only more cars, but also additional buses and other methods of transportation.

Fernandez says that today's students will become important players in the future of engineering as new technologies emerge. She has a piece of advice for them: learn a little about everything.

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