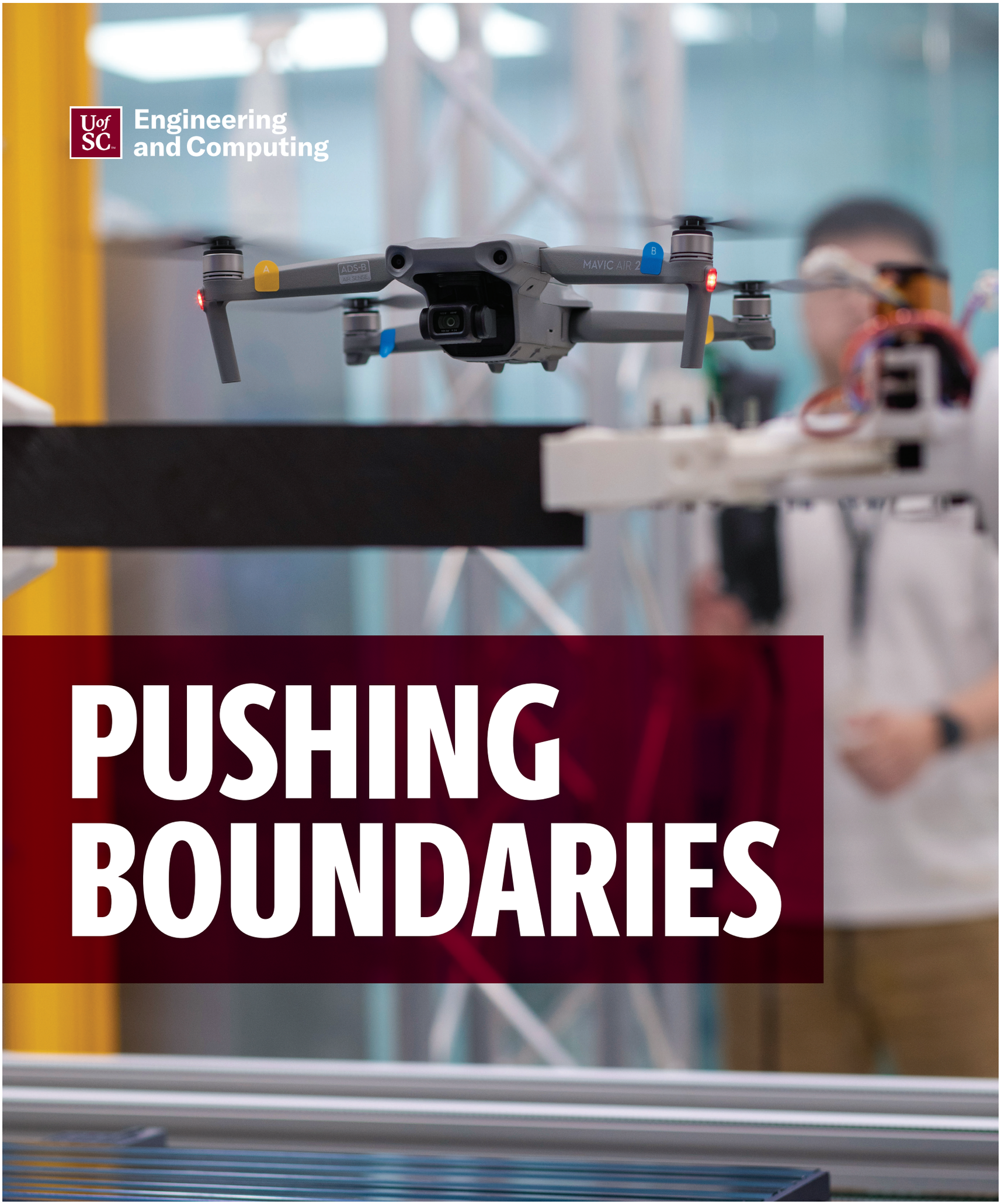

Engineering
and Computing
MAVIC AIR 2
PUSHING
BOUNDARIES

FACTS & FIGURES

College at a glance

$32M
RESEARCH DOLLARS

TOP 100
PATENT PRODUCING UNIVERSITY, 9 YEARS IN A ROW

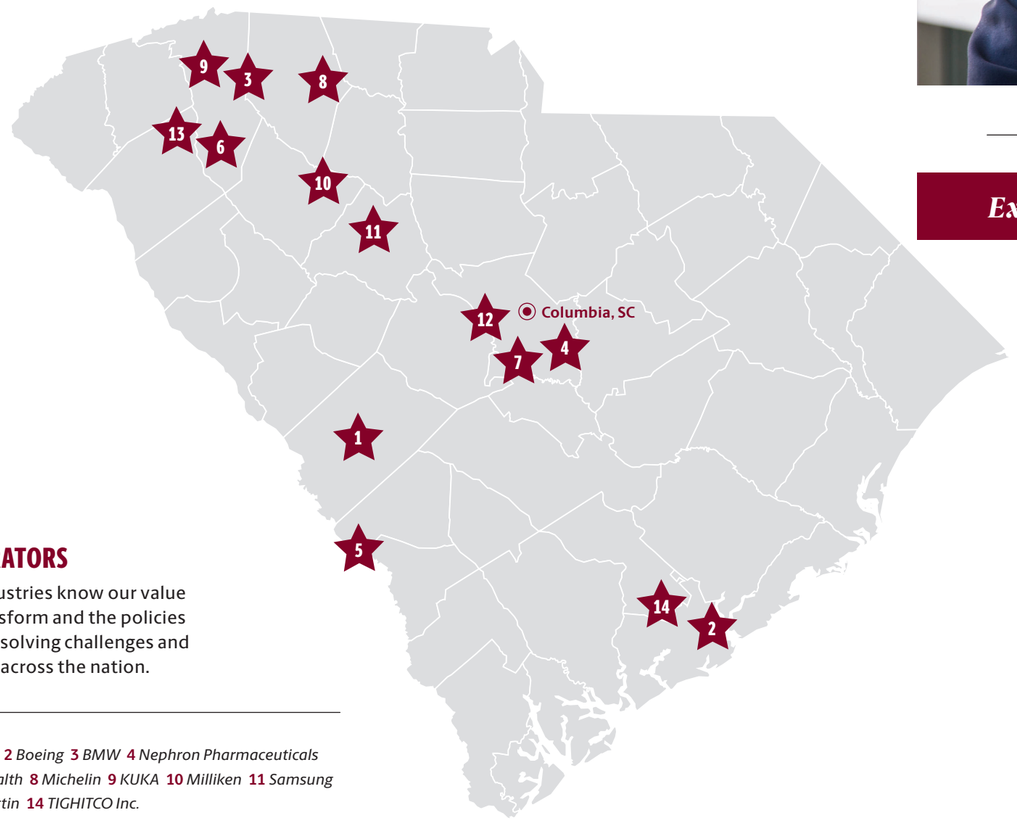
400
SPONSORED PROJECTS

112
FACULTY WITH ACTIVELY FUNDED RESEARCH

486,919 FT²
COLLEGE FOOTPRINT

40%
INCREASE OF GRAD STUDENT ADMISSIONS SINCE 2016

NSF GRAD FELLOWSHIPS
28 WINNERS, **15** HONORABLE MENTIONS OVER THE PAST **10** YEARS



OUR RESEARCH COLLABORATORS

Engineering and computing industries know our value through the businesses we transform and the policies we shape. Together, our work is solving challenges and improving lives in our state and across the nation.

1 *Savannah River National Laboratory* **2** *Boeing* **3** *BMW* **4** *Nephron Pharmaceuticals* **5** *Fort Gordon* **6** *Siemens* **7** *Prisma Health* **8** *Michelin* **9** *KUKA* **10** *Milliken* **11** *Samsung* **12** *Dominion Energy* **13** *Lockheed Martin* **14** *TIGHITCO Inc.*

RESEARCH

HOSSEIN HAJ-HARIRI, DEAN

Since Dean Haj-Hariri's tenure began in 2016, the college has seen significant growth in research expenditures, new faculty hires and student enrollment to become one of the largest colleges on campus.

Background:

Chair, Mechanical and Aerospace Engineering, University of Virginia

Associate Vice President for Research, University of Virginia

- B.S. Civil Engineering, MIT
- M.S. Mechanical Engineering, MIT
- Ph.D. Mechanical Engineering, MIT

Excellence in research

ADVANCED MANUFACTURING AND AEROSPACE MATERIALS

Our research in thermoplastics, induction welding, advanced composite manufacturing, non-destructive evaluation and composite 3D printing are helping shape the future of aerospace.

ENERGY STORAGE AND DISTRIBUTION

The demand to intelligently store and deliver energy is increasing daily. We're providing solutions with experts in power electronics, energy distribution, batteries and other fuel cells.

ARTIFICIAL INTELLIGENCE

AI is becoming an integral part of our daily lives and includes research projects in every field. At UofSC, applied AI is fueling research across campus, from journalism to public health.

NUCLEAR ENERGY

As one of the only nuclear engineering programs in the state, we've invested in finding safe, sustainable, long-term solutions using nuclear energy. Our partnership with the Savannah River National Laboratory gives us access to some of the top facilities and scientists in the world.

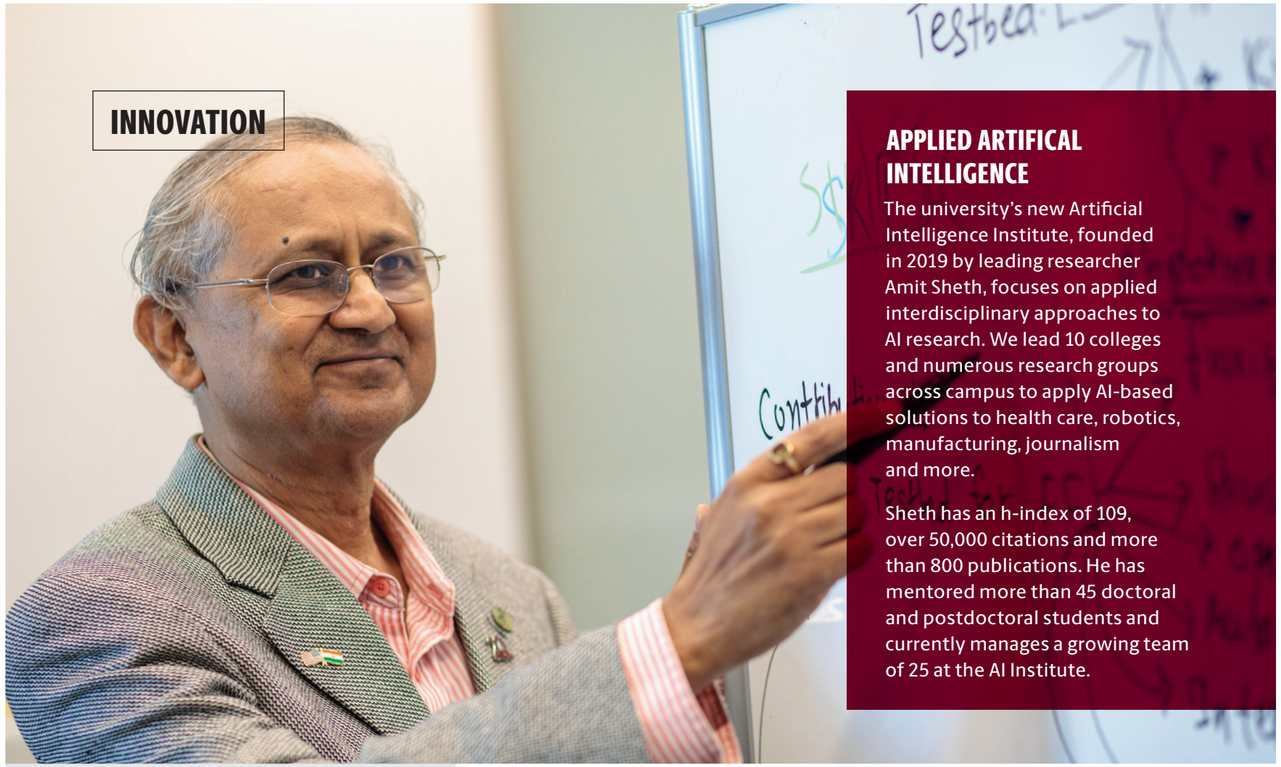
INTELLIGENT INFRASTRUCTURE

Our college is pushing the boundaries of intelligent infrastructure through innovation that leads to implementation. We're also working to extend the useful life of the existing infrastructure across the U.S.

TRANSFORMING HEALTH CARE

With an eye toward digital transformation, personalized health, information security and artificial intelligence, we're finding more efficient ways to deliver highly effective health care to every patient.

INNOVATION



APPLIED ARTIFICAL INTELLIGENCE

The university's new Artificial Intelligence Institute, founded in 2019 by leading researcher Amit Sheth, focuses on applied interdisciplinary approaches to AI research. We lead 10 colleges and numerous research groups across campus to apply AI-based solutions to health care, robotics, manufacturing, journalism and more.

Sheth has an h-index of 109, over 50,000 citations and more than 800 publications. He has mentored more than 45 doctoral and postdoctoral students and currently manages a growing team of 25 at the AI Institute.

3 YEARS, 3 GRANTS FROM NASA

We're helping NASA create safer, lighter and cheaper air and spacecraft. Since 2019, researchers at UofSC have earned $15 million via three grants from NASA's University Leadership Initiative, a program that employs higher education institutions to support the agency's aeronautics research goals.

NASA GRANT IMPACT

Creating safer and more affordable future vertical lift vehicles
$5.3 million

Improving aviation communications
$4 million

Developing manufacturing processes for urban air mobility vehicles
$5.7 million

Electrifying Navy Ships

More than 20 years ago, we partnered with the U.S. Navy as a founding member of the Electric Ship Research and Development Consortium with the goal to fully electrify a naval ship. Researchers in the Department of Electrical Engineering focused on power electronics, controls and design simulation and created a virtual testbed that allowed the Navy to see which of the consortium's new technologies would work, and which technologies would work best together.

Now, our contributions place the Navy on the path to its first electric vessel — one with greater protection against faults, more reliable ship performance and more efficient energy usage during operation.

FACULTY

World-class faculty

Our NAE members

We have more members of the National Academy of Engineering than any institution in the state. Four members who boast the profession's highest distinction call the University of South Carolina home.

JOHN MONNIER

- **Discovered a new chemical compound with hundreds of applications ranging from pharmaceuticals to automotive fuel components.**

Chemical Engineering, elected 2017

MICHAEL SUTTON

- **Created digital image correlation-based measurement technology and disseminated it through commercialization and applications in industry.**

Mechanical Engineering, elected 2020

FREDERICK DRYER

- **Contributed to the understanding of combustion processes for propulsion and transportation applications and for fire safety.**

Mechanical Engineering, elected 2021

PAUL G. GAFFNEY

- **For technical leadership in naval research and development and its impact on U.S. defense, ocean policy and the Arctic.**

Counselor to the Dean, elected 2010

FACILITIES

McNair Center stands apart

INNOVATION IN THE HEART OF THE CAPITAL CITY

The McNair Aerospace Center is more than a hub for aerospace research. Named in memory of Challenger astronaut Ronald E. McNair, the McNair Center launched in 2011 with a mission to educate students, work alongside industry partners, and provide workforce development for one of SC's largest economic clusters: aerospace. Now, it's the home of research partnerships in aerospace and beyond, including Samsung, Boeing, Yaskawa, Nephron Pharmaceuticals, NASA and the U.S. Army.

COMBUSTION ENGINEERING

Combustion science engineering is critical as we look to create a cleaner, greener energy future. At the McNair Center, our researchers are improving engine performance and fuel efficiency through computational and experimental investigations. With concentrations in fuels, energy conversion and propulsion technologies, we're making strides to ensure traditional fossil fuel combustion methods are cleaner and more efficient than ever before.

COMPOSITE MANUFACTURING

UofSC is home to the only full-scale, university-operated Automated Fiber Placement machine in the country. That means our students can become fluent in operating the same machine used at NASA without leaving campus. From making advanced composites and creating thermoplastics to assembling with induction welding, the McNair Center is on the cutting edge of aerospace manufacturing research.

PREDICTIVE MAINTENANCE & DIGITAL TRANSFORMATION

The Center for Predictive Maintenance creates methodology for effective aircraft maintenance programs using computer science, control theory, advanced signal processing, data analysis, digital twin technology and manufacturing systems. By combining real-world data and smart systems, we're decreasing costs and extending lifespans. Our research has helped the U.S. Army save millions annually and reduced gearbox replacements by 34.5 percent.

FUTURE FACTORIES LAB

In the Future Factories Lab, researchers focus on what's next in the manufacturing industry and solve the problems that companies have yet to identify. Our students interact daily with cutting-edge technologies including autonomy, artificial intelligence, augmented reality, robotics and the Internet of Things to become leading manufacturing engineers.

OPPORTUNITIES

Developing leaders

Earning a Well-Dressed Ph.D.

"A student enters grad school to learn to do research, to learn to become a leader in some disciplinary area and to gain not only technical depth, but all the other skills it takes to become a leader no matter where the person goes from there."

— Michael Matthews, senior associate dean for research and graduate programs

No formalwear is required to complete your "well-dressed Ph.D." At UofSC, you will have the opportunity to tailor your graduate experience with hands-on faculty mentors, courses for research communications and scholarly publications, and classes geared to your individual goals. Regardless of your career goals, you will have the skills to make decisions, evaluate data, communicate your research and build your professional network.

GRADUATE PROGRAMS

- *Aerospace Engineering*
- *Biomedical Engineering*
- *Chemical Engineering*
- *Civil Engineering*
- *Computer Engineering*
- *Computer Science*
- *Electrical Engineering*
- *Engineering Management*
- *Health Information Technology*
- *Informatics*
- *Mechanical Engineering*
- *Nuclear Engineering*
- *Technology Innovation and Entrepreneurial Engineering*

GRADUATE CERTIFICATES

- *Artificial Intelligence*
- *Cyber Security Studies*
- *Railway Engineering*

I AM MADE OF CREATIVE EXPLORATION.

I AM SOUTH CAROLINA.

How can children improve their problem-solving skills? Using the Rubik's cube as a test case, Forest Agostinelli, assistant professor of computer science and engineering, is working with an interdisciplinary team to develop collaborative artificial intelligence algorithms that help students discover their own, personalized approach to solving problems. The goal is to create algorithms that can help fuel human learning, facilitating collaboration between AI and people that can drive knowledge and innovation to new heights.