

WORLD CHAMPS IN COMPUTER VISION | \$9.64 MILLION IN ENERGY RESEARCH AWARDS  
INNOVATING COVID-19 SOLUTIONS | TOP 5 RANK IN TRANSPORTATION SCIENCE  
RECORD # NSF CAREER AWARDS | NEW DIVERSITY AND INCLUSION TASK FORCE | MORE INSIDE



UCF College of Engineering and Computer Science

# NEWS HIGHLIGHTS

2020



## UCF Student-Designed Sculpture Dedicated at Exploria Stadium

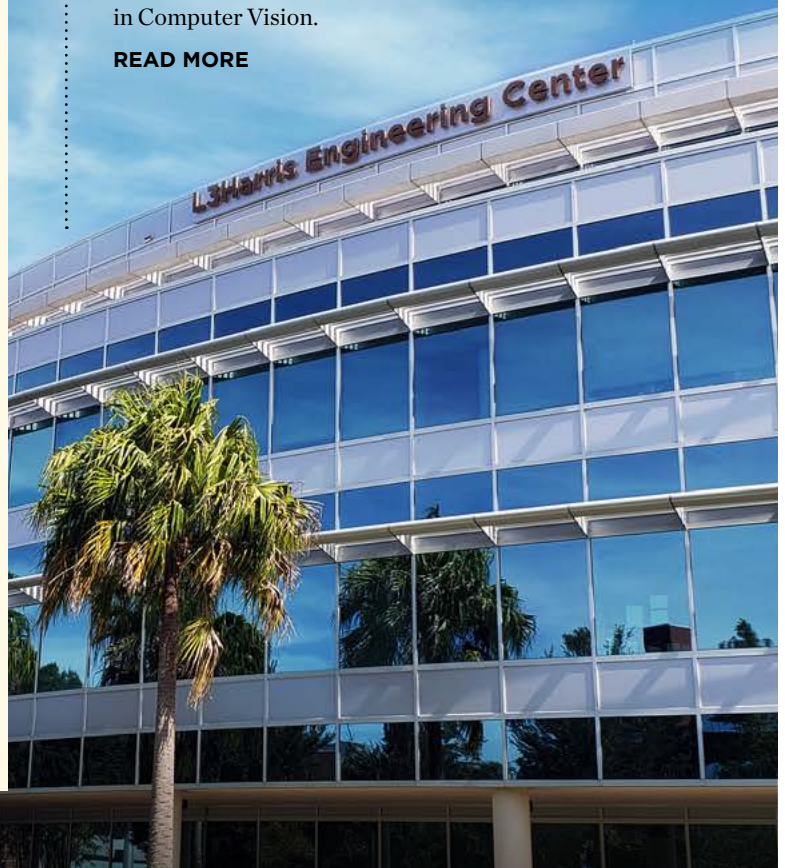
Standing tall in Orlando City Soccer purple, the solar-powered sculpture casts eye-catching filigree shadows and illuminates at night. In 2018, a team of 11 UCF students won an Orlando Utilities Commission design challenge. Pictured at the Dec. 17 dedication ceremony are former teammates Erin Dudley '18 (mechanical engineering), Kealey Keepers '19 (studio art) and Ramin Ragbir '18 (mechanical engineering). Other teammates: computer engineers Simon McGlynn '18 and Daniel Truong '18; electrical engineers Denis Aybar '18 and Juan Forero '18; mechanical engineer James Exum '18; and studio artists Gabby Mancini '18, Joel Rouff '18 and Joel Zorowitz '20.



## UCF Unveils L3Harris Engineering Center

One of the most prominent buildings on UCF's main campus has been renamed, showcasing the longstanding partnership between UCF and L3Harris Technologies, Inc. The company employs a significant number of UCF graduates. Originally named the Harris Corporation Engineering Center, the 113,866 square-foot structure was built in 2006, and houses the Dean's Office, the Department of Computer Science, the Department of Electrical and Computer Engineering, and the UCF Center for Research in Computer Vision.

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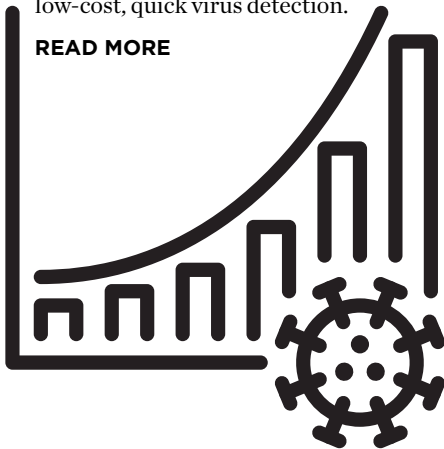


# INNOVATING SOLUTIONS FOR COVID-19

## UCF Launches Artificial Intelligence and Big Data Initiative

Led by Assistant Prof. Ivan Garibay, of the UCF Department of Industrial Engineering and Management Systems, the initiative awarded \$185,000 each to five teams to conduct research related to COVID-19, including projects related to how the pandemic has impacted technology, creating nanofilm defense against the virus, studying gases exhaled by patients, and developing low-cost, quick virus detection.

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## Longer-Lasting COVID-19 Disinfectant

UCF Materials Science and Engineering alumna Christina Drake '07PhD is working with UCF Professors Seal and Parks to develop a new, rapid-acting, long-lasting disinfectant spray that instantly kills viruses without using harsh chemicals. Drake, who owns Orlando-based Kismet Technologies, Ltd, is the lead on the NSF-sponsored project.

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## Nano-Engineered Material to Kill COVID-19

Materials Science and Engineering Prof. Sudipta Seal came up with an idea to create a germ-killing protective coating for the material in masks, gloves and hospital gowns. He teamed up with Prof. Griffith Parks, a virologist at UCF's College of Medicine, and received funding from the National Science Foundation.

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## UCF-Trained Engineers Help Design 3D-Printed Ventilators that Require No Electricity

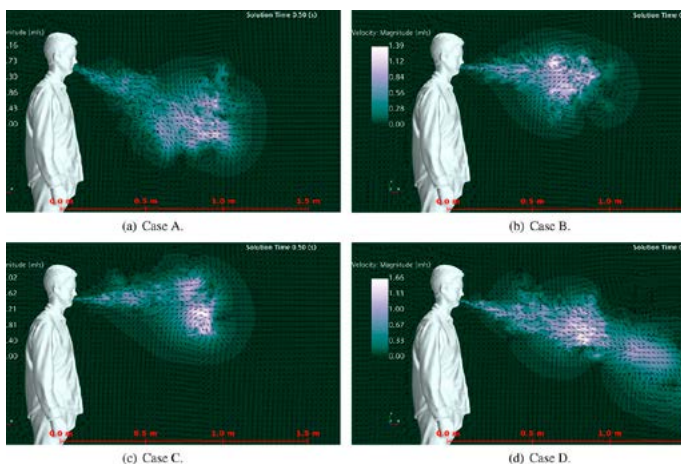
The low-tech ventilators can be replicated anywhere in the world for less than \$10 of material, says Albert Chi, of Oregon Health and Science University, who teamed up with his friend and clinical-trial collaborator Albert Manero '12 '14MS '16PhD, mechanical and aerospace engineering alumnus and CEO of UCF-based Limbitless Solutions.

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Limbitless Solutions also shifted operations to 3D-print face shield components to help the nation's healthcare heroes.

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## A Candy to Control Aerosolized Breath Droplets

Mechanical and Aerospace Engineering faculty Michael Kinzel and Kareem Ahmed were awarded a National Science Foundation **Rapid Response Research Award for \$200,000** to explore how a lozenge made with simple ingredients may be used to help reduce COVID-19 transmission.

The pair also authored a study that has identified physiological features that could make people super-spreaders of viruses such as COVID-19.

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# TOP RANKINGS AFFIRM AREAS OF STRENGTH



## UCF Ranked Nation's #1 Workforce Supplier - and #2 Preferred Supplier - to Aerospace and Defense Industries

UCF achieved the ranking for the sixth consecutive year. Using insight from companies in these industries, *Aviation Week Network* also ranked the university as the No. 2 preferred supplier in the U.S.

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## UCF Achieves Top World Ranking in Transportation Science

UCF ranks #5 in U.S., and #29 in the world by Shanghai Ranking's Global Ranking of Academic Subjects 2020.

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## UCF's Aerospace Engineering Graduate Program Ranks No. 53 Nationally in its First Year Offering a Ph.D.

All engineering graduate programs at UCF eligible for ranking have retained their top 100 spots in *U.S. News & World Report's* recently-published Best Graduate Schools 2021 guide.

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## UCF Faculty Inducted into Academy of Science, Engineering and Medicine of Florida

UCF engineering and computer science professors Mohamed Abdel-Aty, Waldemar Karwowski and Mubarak Shah are among 22 honorees inducted Nov. 7 to the Academy of Science, Engineering and Medicine of Florida (ASEMFL), a group that brings together the nation's most distinguished scholars and researchers who live and work in Florida. ASEMFL members are committed to addressing key issues and challenges impacting Florida.

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# TOP AWARDS AND TROPHIES

## World Champs: Center for Research in Computer Vision

In 2020, the UCF Center for Research in Computer Vision won a worldwide competition with technology that automatically tracks behavior in long security videos. The win comes during a year that CRCV faculty landed major awards, including more than \$2.5 million in National Institutes of Health R01 funding. Read more about CRCV's 2020 successes.

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## Abdel-Aty to Receive Highest Award from the U.S. Transportation Research Board

Mohamed Abdel-Aty, chair, Department of Civil, Environmental and Construction Engineering, will be honored with the 2020 Roy W. Crum Award on Jan. 27, recognizing his distinguished achievements in the development of immediate practical applications of his fundamental and developmental research and contributing broadly to the science of transportation safety.

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## Digital Forensics Graduate Student Places 2nd in National Cyber Competition

Michael Roberts '19 beat more than 450 students from across the nation in the U.S. Department of Energy's 2020 CyberForce Competition, which was held virtually Nov. 14.

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## UCF Programming Team Earns Bronze at North America Competition, Advances to World Finals

The team, made up of UCF computer science majors — Ahmad Barhamje, Burnett Scholar Joshua Fair and Burnett Scholar David Harmeyer — finished higher in the February 2020 continental contest than teams from Cal Tech, Stanford, Princeton, Yale and Cornell, to name a few. UCF's Programming Team has consistently ranked among the best in the nation in ICPC competitions.

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## UCF Closes 2020 with \$9.64 Million in Energy Research Awards

UCF was selected to receive four awards from the U.S. Department of Energy's Solar Energy Technologies Office, the most of any university in 2020. College of Engineering and Computer Science faculty lead research for three of the four awards that total \$9.64 million: \$7 million from DOE and \$2.64 million in UCF match funding.

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**MILLIONS  
IN RESEARCH FUNDING  
AWARDED**

## UCF Sets Research Funding Record of \$204.5 Million

The College of Engineering and Computer Science led the university with \$50.59 million in funding in Fiscal Year 2020. It marks the third consecutive year that UCF engineering and computer science researchers topped \$50 million.

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## UCF Ranks Among the Top in Nation for NSF CAREER Awards

UCF had 12 confirmed awards in 2020, including seven in the College of Engineering and Computer Science. CECS's 2020 CAREER Awardees are Andrew Dickerson, Kelly Kibler, Paul Gazzillo, Ranajay Ghosh, Helen Huang, Akihiro Kushima, Junjian Qi. National Science Foundation CAREER awards are among the most prestigious in the nation and recognize early-career researchers.

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# NEW DEGREES AND CERTIFICATES

## Bachelor's Degree in Materials Science and Engineering Begins

The new undergraduate degree option focuses on a field that combines engineering, physics and chemistry to design and manufacture materials that all other engineering fields require. UCF is one of only two universities in the state to offer the MSE major.

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## Nation's First Master's Degree in Travel Technology and Analytics



The master's degree program is offered by UCF's College of Engineering and Computer Science and Rosen College of Hospitality Management, ranked No. 4 in the world for hospitality education by CEOWorld magazine. The degree is designed to prepare computer scientists, data analysts, software developers and information technologists for jobs in the travel industry.

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## Two New Guidance Control and Dynamics Tracks Enhance MAE Master's Degrees

The **Aerospace Engineering MSAE, Guidance Control and Dynamics Track** and **Mechanical Engineering MSME, Guidance Control and Dynamics Track** are now offered through the Department of Mechanical and Aerospace Engineering. In addition, UCF Online offers an **online Aerospace Engineering MSAE** and an **online Mechanical Engineering MSME**.

## New Certificate Programs Launched in 2020

UCF's graduate certificates provide professionals an easy way to boost careers with specialized skills in burgeoning fields.



- **FinTech Graduate Certificate.** Offered jointly with the College of Business focusing on the use of technology to innovate, improve and facilitate the delivery of traditional financial services. Also see **UCF Online's FinTech Certificate**.
- **Data Analytics Graduate Certificate, and UCF Online's Analytics Certificate.** Data analytics seeks to infer insights from big data by using various computer science techniques and statistical algorithms.
- **Technologies for Smart Communities Graduate Certificate.** Designed to prepare engineers and professionals to undertake advanced engineering or research efforts in the interdisciplinary areas of smart and connected communities and cyber-physical systems.
- **Mixed Reality Engineering Graduate Certificate** provides a comprehensive overview of virtual and augmented reality technologies culminating in the development of a mixed reality software application or system.



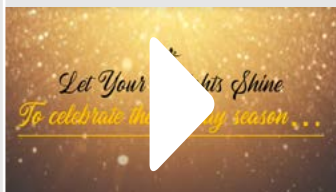
# SERVING STUDENTS AND EMPLOYEES IN EXTRAORDINARY TIMES



## Helping Students Navigate Uncharted Times

Philanthropic gifts of all amounts are integral in students' academic success. For example, \$25 buys prototyping materials for the Texas Instruments Innovation Lab; \$150 provides a student with a book scholarship; \$500 offsets students' costs to attend competitions and academic conferences; and \$1,000 provides a significant scholarship to help defray tuition and other academic needs. Launched in 2020, the CECS Dean's Compass Society recognizes more than 80 donors for their commitment to leadership-level annual giving which provides critical funding for scholarship support, senior design projects and more.

Watch CECS's end-of-year student thank-you video.



Donate  
Here

## Task Force Sparks Culture Shift Toward Equity, Inclusion and Diversity

Transforming organizational culture to create an environment that celebrates equity, inclusion and diversity is the goal of the Equity, Inclusion and Diversity Task Force recently established in the College of Engineering and Computer Science.

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## Virtual Senior Design Showcase Attracts Record Number of Participants

### *Student-Made Innovations Address Real-World Issues*

Despite social distancing protocols, more than 280 graduating seniors spent the year virtually collaborating in teams to create more than 100 capstone senior design projects that were showcased Dec. 4 in video presentations. And 90+ UCF engineering and computer science alumni served as volunteer judges, collaborating virtually from locations as far away as Paris, France, to select the best project in each discipline and Best in Show.

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## 100+ Virtual Faculty Research Talks Presented, Shared to Spark Collaborations

To invite new research collaborations across the university and with industry, more than 100 engineering and computer science faculty have overviewed their cutting-edge research since May 2020 in short presentations Zoom-cast every Friday. Presentations are shared to the UCF College of Engineering and Computer Science's YouTube channel and archived in a web repository of talks. Learn more, and view past presentations: CECS Virtual Faculty Research Talks series.

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## Industrial Engineers Help UCF Streamline a Safe Move-In Process

### *Borrowing Concepts from Fast-Food Drive Through Expertise*

With 6,000 students moving into main campus housing during a pandemic, UCF turned to its IT team, industrial engineers and a fast food drive-through expert to make the high-volume process as safe and efficient as possible.

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## Nine New Faculty in 2020

Meet our new engineering and computer science faculty who joined the college in 2020.

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## UCF College of Engineering and Computer Science



Dean's Office | L3Harris Engineering Center #114  
P.O. Box 162993 | Orlando, FL 32816-2993  
407-823-2156 | [info@cecs.ucf.edu](mailto:info@cecs.ucf.edu)

Connect with us on social media



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**COLLEGE OF ENGINEERING  
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