30 YEARS

UCF Center for Research in Computer Vision

Nation's Longest-Running NSF Research Experience for Undergraduates Site

Opening Doors to the Nation's Brightest Undergraduate Researchers

Funded for 30 consecutive years by the National Science Foundation, UCF's Research Experience for Undergraduates (REU) in Computer Vision is the nation's longest-running REU site.

The site has been funded with a series of 12 grants starting in 1987 totaling $2.8 million.

Each year, only 10 undergraduates – out of 175 to 200 applicants – are selected to participate in the intensive 12-week summer program at UCF.

Marielle Morris, a physics student from Rice University with a minor in math, is part of the 2017 cohort. She applied to the CRCV REU program because she liked how the computer vision field combines the challenge of algorithmic computations with real-world applications. Her research involves classifying visual attributes in videos so that a computer will be able to detect emotions and other descriptive traits.

"I'm helping to create a way for a computer to tell us, for example, that not only is it a dog, and not only is it a brown dog, but it's a sleeping dog, or a happy dog, or a curious dog. There isn't a data set for this yet."

Previously unsure what path to take after graduation, Morris says her REU experience at UCF convinced her to attend graduate school. In the fall she intends to pursue a Ph.D. in computer science. "I'm really excited about doing research now."

In 2015, computer engineering student Malcolm Collins-Sibley, from Northeastern University in Boston, added computer science as his second major because of his UCF experience. He applied to the REU program intrigued by the topic and UCF's round-the-clock mentoring.

"The subject matter was very interesting to me — the idea that a computer can interpret the world visually in the same way as any person can," he said."I was able to apply without any specific experience in computer vision," he added.

"I'm really excited about doing research now."

— Marielle Morris,
Rice University physics student

"We believe in theory and practice. We are interested in mathematical modeling and analysis of difficult vision problems and developing algorithms, while building systems for demonstrating those solutions in real-life situations."

— Mubarak Shah
UCF Trustee Chair Professor
Director, CRCV

BY THE NUMBERS

300
undergraduates

79
research papers

68
institutions

30
years

The 2016 REU cohort with Dr. Shah and other CRCV faculty.

Dear Dr. Bagci,
Thank you so much for all you have done for me. I write from Vanderbilt University where I have recently started research towards my Ph.D. in biomedical engineering. I'll be studying ways to improve image-guided surgery techniques for breast cancer.

Your mentorship and the research skills I was able to learn from you have proved invaluable.

— *Winona Richey,*
2016 REU Student
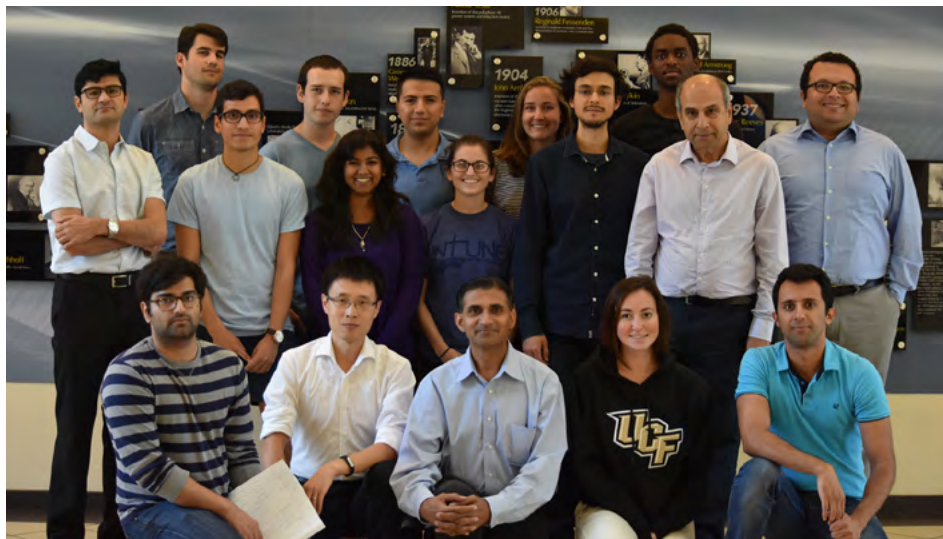
Sibley partnered with UCF doctoral student Shervin Ardeshir on a project involving geo-semantic segmentation, describing it as "breaking an image from an urban setting into 'meaningful' sections." He praised his experience at UCF in code writing using MATLAB and weekly progress reports. "They helped me with my skills in presenting very technical work in a way that everyday people can understand."

"The research is intensive," said Mubarak Shah, UCF Trustee Chair Professor and CRCV director, who with more than 40,000 citations is one of the highest cited authors in computer vision. "We believe in theory and practice. We are interested in mathematical modeling and analysis of difficult vision problems and developing algorithms, while building real systems for demonstrating those solutions in real-life situations."

Niels da Vitoria Lobo, associate professor, computer science, is co-principal investigator of the REU grant and the main point of contact for the site. Research topics include video surveillance, zero-shot learning, bio-medical imaging, visual saliency and attention, visual geo-localization, object detection, tracking, activity and event recognition, facial recognition, automated scrutiny of extensive video footage, and more.

NSF's goal for REUs is to attract talented undergraduates into research careers.

UCF's full-time, 12-week summer REU in Computer Vision has become a national model that features mentoring from faculty and graduate students, and a streamlined short course and numerous practical challenges to test academic ability and communication skills.

Young researchers typically advance to graduate school and become faculty, like UNC Chapel Hill Assistant Professor Tamara L. Berg, who participated at UCF's REU site in 2000-01. Others start companies, such as University of South Florida graduate Maha Sallam, who was at UCF's REU in 1989-90. Her Tampa-based company VuEssense, Inc., employs 100 people and generates $20 million in revenue.

UCF | **Center for Research in Computer Vision**

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