Research Experience for Undergraduates in Computer Vision at UCF

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The aim of Research Experience for Undergraduates (REU) program is to attract talented undergraduates into research careers.
From Michigan to Florida!
(1986)
Some Statistics!

• In 1977 there were 4,000,000 high school sophomores in the U. S.
• 730,000 of these students expressed interest in science and engineering careers.
• In 1980, when they entered college, 340,000 retained their interest.
Some Statistics!

• By 1984, 206,000 had actually graduated in scientific or engineering disciplines.
• Only 61,000 of these men and women entered graduate school in science or engineering.
• By 1992, just 9,700 graduated with Ph.D.s
Some Statistics!

• To have only 0.2% of these students end up with doctoral degrees does not seem promising!
Key Elements of UCF REU

- Immerse the participants in research.
- Full calendar year experience.
- Assign each participant a faculty advisor from his or her own School.
- Follow through over the year.
Program Outline

• Recruiting
• Short course
• Research projects selection
• Coursework (CAP5415 Computer Vision)
• Write technical report/research paper
Student Activities

• Meetings
  – Individual meetings
  – REU group meetings
  – Vision group meetings

• Journal club

• Attendance in conferences

• Colloquia by known researchers
Our REU Grants (87-91)

• 1987: Mubarak Shah
• 1988: Missed the announcement
• 1989: Mubarak Shah, Kevin Bowyer, and G. Krishnan
• 1990: Mubarak Shah, Kevin Bowyer, and G. Krishnan
• 1991: Mubarak Shah, Kevin Bowyer, and G. Krishnan
Our REU Grants (92-97)

- 1992: Mubarak Shah and Kevin Bowyer (Funded for two years)
- 1993
- 1994: Did not get funded
- 1995 Mubarak Shah, Kevin Bowyer, Louise Stark and Niels Lobo (Funded for three years)
- 1996
- 1997
Our REU Grants (98-2005)

- 1998: Mubarak Shah, Niels Lobo, Art Weeks (funded for three years)
- 1999
- 2000
- 2001: Mubarak Shah, Niels Lobo, and Takis Kasparis (funded for five years)
- 2002
- 2003
- 2004
- 2005
Our REU Grants (2006-211)

• 2006 Mubarak Shah, Niels Lobo, and Takis Kasparis (funded for three years)
• 2007
• 2008
• 2009 Mubarak Shah, Niels Lobo, and Marshall Tappan (funded for three years)
• 2010
• 2011
Our REU Grants (2012-)

• 2012 Mubarak Shah, Niels Lobo, and Rahul Suthankar (funded for three years)
• 2013
• 2014
**Measures of Success**

- Approximately two hundred and fifty undergraduates from more than thirty-five different institutions in the country have participated.
- Roughly half of the participants have gone to the graduate school.
- REU participants have co-authored more than seventy-five research papers.
- Fifteen students have written Honors in the Major Theses.
- Several participants are now faculty members at different Schools.
- Four participants have started their own companies.
Measures of Success

- 1989-1990 participant, Maha Sallam, cofounded a company in Tampa Bay area, which now employs 100 people, and generates a revenue of $20 millions.

- In 1990-1990, Adam Hoover participated from USF. He is currently associate professor at Clemson University.

- 1993-1994 participant, Jim Davis, went to MIT for his Ph.D., he is now a professor at Ohio State.

- In 2000, Andrew Wu, REU participant from UIUC, won a Honeywell award, given only to a single junior in the College, on his REU project.

- In 2000, Tamara Miller participated from University of Wisconsin. She was admitted to Ph.D. program at UC Berkeley. Currently, she is an assistant professor at SUNY Stony Brook, NY.

- In 2001, Paul Smith, received Barry Goldwater award, first ever for UCF, on his REU project.

- In 2003, Ankur Datta, was the finalist for CRA outstanding undergraduate award, and received three year NSF fellowship for his Ph.D. at CMU. He is now at IBM TJ Watson.
Papers by Co-authored by REU Students


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Papers by Co-authored by REU Students

42. Ruo Zhang, Ping-Sing Tsai, **James Cryer** and M. Shah. “Analysis of Shape from Shading Techniques”, CVPR 994.
Papers by Co-authored by REU Students


Papers by Co-authored by REU Students


60. **Sutton, Melanie**, Stark, L. and Bowyer, K, “Reasoning about function to achieve generic recognition of rigid 3-D shapes”, *Pattern Recognition*.


Papers by Co-authored by REU Students


Papers by Co-authored by REU Students


Honors in the Major Theses


• Brandyn White, Topic: Using FPGAs to Perform Embedded Image Registration, Graduation Date: Spring 2009.
Honors in the Major Theses


Honors in the Major Theses

• Alfred Levy III, *Topic*: Object Tracking in Low-Frame-Rate Video Sequences, *Graduation Date*: Spring 2004

• Ankur Datta, *Topic*: Gait-based Recognition, *Graduation Date*: Spring 2004


Honors in the Major Theses

- **Anna Ortega**, *Topic*: From Shape from Shading to Recognition, *Graduation Date*: Fall 1994
Institutions

- Amherst College
- University of Wisconsin
- University of Illinois Urbana Champaign
- Florida Institute of Technology
- University of Central Arkansas
- Cornell University
- University of Southern California
- Transylvania University
- College of William and Mary
- University of Nevada, Reno
Institutions

- University of California, Berkeley
- Stetson University
- Yale University
- College of William and Mary
- Stetson University
- Yale University
- City College of New York
- Rollins College
- FAMU
Institutions

• University of Tennessee
• Winston Salem State University
• University of Texas Pan American
• SUNY Brockport
• Trinity College
• University of Pacific
• Vanderbilt University
• Winthrop University
• University of Rochester
Institutions

- Fairfield University
- New York University
- University of Michigan
- University of South Florida
- University of South Dakota
- Swarthmore
- Georgia Tech
- University of Maryland, Colleg Park
Institutions

• McKendree University
• Providence College
• Carnegie Mellon University
1987-1988

- Jay Hackett
- Kristine Gould
- Sanjay Kapur
- John Weidner
- Robert Hunt
- Ofir Eyl
- J. Lachawani
1989-1990

- Jim Cryer
- Robert Franceschini
- Matt Lavoie
- Gary Ramah
- Randy Bolling
- Thor Raabe
- Maha Sallam
- Katrina Simpson
- Elizabeth Brooks
- David Randolph
- Jay Stryker
1990-1991

- Glenn Martin
- Michelle Rueda
- Sundar Sinnappan
- Derek Tolley
- David Jones
- Bob Pankratz
- Avare Stewart
- Bonnie Kaiser
- Edward Wokabi
- Belinda Wilkins
- Jon Altfeld
1991-1992

- Bill Allen
- John Delgado
- Connie Lee
- Melanie Sutton
- Sean Tucker
- Mat Clark
- Julie Nichols
- Adam Hoover
- Natalie Bennett
1992-1993

- Julie Nichols
- Fred Coulter
- Natalie Bennett
- Gary Hubiak
- Katharine Keiter
- Sean Ramsey
- Chris Stimac
- Barry Bruno
1993-1994

- John Adair
- Gillian Jean-Baptiste
- Diana Burkette
- Chris Doss
- Jesse Campos
- **Jim Davis**
- Heath Glandon
- **Warren Macchi**
- Deborah Snead
- Anna Ortega
- Pam Musgrove
1995-1996

- Paul Barnowski
- Phuong Bui
- John Guthrie
- Jaren Johnston
- Sandra Sabiston
- Kyong Chang
- Ian Lawrance
- Min Shin
- Tana Cicero
1996-1997

- Chris Efford
- Wen-Lin Hsu
- Gul Imran
- Paul Prestopnik
- Shvetal Shah
- Sean Dougherty
- Lisa Provenzano
- Jin Oh
- Victor Gong
- Jason Mancini
1997-1998

• Doug Ayers
• **Chris Ingrassia**
• Kris Urrutia
• Victor Olvera
• Elli Portugali
• Shannon Thrasher
• Sean Dougherty
• Glen Parker
• Shane Dunn
• Matthew Krebs
1998-1999

- Julie Rogers
- Daniel Kristjansson
- Stefan Dragolov
- Sharon Cole
- Michael Wallick
- Steven J. Huey
- Hai X. Nguyen
1999-2000

• Ibrahim Merchant
• Andrew Wu
• Robert Aylesworth
• Kevin Neff
• Daniel Hurley
• Neill Lott
• Raymond Paul Smith
• Merrill Mc Kee
• Dorota Woodbury
2000-2001

• Alison Austin
• David Bracewell
• Rex Hoffman
• Chris Martin
• Tamara Miller
• Ashish Myles
• Rusty Phillips
• Richard Russo
2001-2002

- Jigna Bhatt
- Ankur Datta
- Jaime Dever
- David Diel
- Kristopher Fieler
- William Grissom
- Alfred Levy
- Sean Szumlanski
- Joanna Walker
- Joseph Wilson
- Xiaron Zheng
2002-2003

- Josh Hight
- Todd Gillette
- Danny Yuen
- Meng Ly Lay
- William Yip
- Steven Kreyenbuhl
- Kevin Armstrong
- Madhvi Kansagara
- Lorraine Harrington
- Chris Elwell
2003-2004
2003-2004

- David Batz
- Michael Batz
- Justin Garcia
- Victor Ortenberg
- Chris Chun-Ning Poon
- Chris Subich
- Michael Wells
- Chance Yohman
2004-2005

- Patrick Delfert
- Macpherson Delva
- Ross Diankov
- Peter Humke
- Eric Lynch
- Chris Pendley
- Chris Schwarz
- Casey Thurston
- Angelica Warren
2005-2006

- Miko Charbonneau
- Shayne Czyzewski
- Jason Feinstein
- Carlos Flores
- Jonathan Jarvis
- Jan Prokaj
- Vladimir Reilly
- Phillip Rydzewski
- Mike Sollami
- Gregory Yoblin
2006-2007
2006-2007

- Robert Barbier
- Michael Bok
- Adam Kavanaugh
- Edward Guldemond
- Daniel De Blasio
- Matthew Banner
- Brian Byrne
- Daniel Courtney
- David Chiong
- Dan Pencoske
- Lillian Juarez
- Charles Percival (RET)
- Timothy Gallagher (RET)
2007-2008

- James Painter
- Ben Schoepke
- Maya S. Shoham
- Jenny Han
- Adam B. Yeh
- Taylor Goodhart
- Drew Glazer
- Riyaz Nazerali
- Joshua Sheetz
- Andrew Miller
- Paul Ackerman (RET)
- David Pollock (RET)
2008-2009
2008-2009

- Joshua Hartman, University of Florida
- Nicholas Hirsch, Rice University
- Lam Tran, University of Rochester
- Karthik Prabhakar, Indiana University-Purdue
- Ajay Chabra, University of Southern California
- Alexis Oyama, University of Nevada-Reno
- Robertson Augustine, University of Central Florida
- Steven Braeger, University of Central Florida
- Sarah Applegate, University of Central Florida
- Jason Hochreiter, University of Central Florida
- Cynthia Atherton, University of Central Florida
2009-2010

- Kevin Tang- Cornell University
- Sean McMillan - The University of Notre Dame
- Lance Hartung - The University of Wisconsin, Madison
- Phillip Napieralski - Bemidji State University
- Jon Harter - Eastern Illinois University
- Benjamin Mears-Amherst College
- Jacqueline Nelson - University of Central Florida
- Joel Jurik- University of Central Florida
- Silvino Barreiros- University of Central Florida
2010-2011

• Antonio Rodriguez- University of Central Florida
• Daniel Kennedy- North Carolina State University
• David Jensen- Clemson University
• Joshua Michalczak- University of Central Florida
• Kevin Kyyro- University of Florida
• Neil Gealy- University of Central Florida
• Nolan Warner- University of Nevada, Reno
• Patrick Hynes- University of Central Florida
• Spencer Fonte- University of Central Florida
• Stephan Boyer- Massachusetts Institute of Technology
2011-12

• Alexander Darino - University of Central Florida
• Emily Hand - University of Nevada, Reno
• Amy Ko - Amherst College
• Jeffrey Loppert - University of Central Florida
• Corey Pittman - University of Central Florida
• Taylor Rassmann - University of Central Florida
• Sahil Shah - University of Maryland College Park
• Thomas Swift - University of Rochester
• Nancy Zanaty - University of Central Florida
2012

- Ruben Villegas - University of Central Florida
- Jared Rhizor - University of Nevada, Reno
- Zach Robertson - University of Central Florida
- Cody Seibert - University of Central Florida
- Steven Hickson - Clemson University
- Stephanie Morris - University of Alabama
- Carlos Garcia - University of Central Florida
- LaTia Jefferson - McKendree University
- Paul Finkel - Carnegie Mellon University (CMU)
- William Timlen - Providence University
- Ivette Carreras - University of Central Florida
- Alan Wright - University of Central Florida
A Few Tips

• Programming is going to be crucial..
• Need to devote more than 100% of your time.
• Be focused on research project; you won’t be able to know everything in a very short time.
• Work closely with your graduate students mentors.
Contact Information

• My office is 245-D HEC (REU office hours 2:00 PM Weds)
• Gonzalo is first point of contact for everything.
• Brittany Kaval for Administrative purposes.
• Offices
  – Dr. Lobo, 252
Thanks
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