2012 Annual Report of Electrical and Computer Engineering

University of Central Florida
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5.1 Eta Kappa Nu
Message from the Chair

Academic year 2012-2013 has been both exciting and challenging. Like many other engineering departments around the country, our ECE budget was reduced due to the macro economic conditions and a further reduction of education support from the State. As a part of UCF whose student enrollment is the second largest in the nation, our undergraduate enrollment reached 1421 in Fall 2012, while our faculty headcount was 31. Since 2010, persistent efforts have been made in faculty recruitment, resulting in the hire of 7 T/TT faculty members, 1 research faculty member and 5 lecturers/instructors (including 2 tenured faculty members and 1 instructor hired during the current year). Our faculty headcount has recovered steadily from 24 (when I took over in Fall 2010) to 34 this year, but more work needs to be done (given that the headcount is still below the 2004-2005 level of 39 ECE faculty members).

In spite of budget cuts and faculty shortage, ECE faculty has shown remarkable perseverance in their pursuit of delivering quality education and undertaking impactful research. Among their major accomplishments are

- 64% increase in undergraduate degrees conferred (from 96 BSEE & 45 BSCpE in AY2010 to 157 BSEE & 75 BSCpE in AY 2012);
- 21% increase in PhD degrees awarded (from 13 EE & 6 CpE in AY2010 to 20 EE & 3 CpE in AY 2012);
- Our research and educational programs continue to advance, with new talents hired and with our new foci upon exciting opportunities in energy systems, communication, signal processing, smart sensors, and trustworthy computer systems.
- Departmental infrastructure is enhanced by hiring a full-time staff engineer, upgrading the equipment in all the teaching laboratories, and establishing a new medical robotics laboratory.

AY2012-2013 is a transitional year: our undergraduate and graduate educational programs have been streamlined to operate at a level of very high (arguably the maximum) efficiency, our focused research efforts have brought to fruition major achievements (to be explained in the annual report for AY 2013-2014), and our recent hires are starting to make significant impacts on our programs.

Looking forward, we are very excited about ECE and its future. Although departmental growth is subject internal budgetary constraints, ECE faculty (including 1 NAE member, 7 IEEE Fellows and 4 NSF CAREER awardees) are highly dedicated and creative, and their hard work ensures that our students receive top-quality education and our research addresses critical needs of our time.

This edition of ECE annual report contains the list of our faculty, their expertise and accomplishments in scholarly activities, learning, and technology transfer. With support from our alumni and friends, we will strive to achieve excellence and make ECE the best it can be.

Zihua Qu
Professor and Chair of ECE

October 23, 2013
1. Faculty and Staff

1.1 Faculty

**George Atia**
Assistant Professor  
Ph.D., Boston University, 2009  
Signal processing, Stochastic control, Wireless communications, Controlled sensing, Information theory, Detection and estimation  
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**Issa Batarseh**
Professor  
Ph.D., Electrical Engineering; University of Illinois at Chicago, 1990  
Power Electronics, Energy Conversion and Grid-tied Inverters  
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**Aman Behal**
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Robotics, Neuronal Modeling, Nonlinear Control and Identification, and Visual Servoing  
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**Ronald F. DeMara**
Professor  
Ph.D., Computer Engineering; University of Southern California, 1992  
Computer Architecture, Intelligent Systems, Evolvable Hardware  
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**Michael Georgiopoulos**
Dean and Professor  
Ph.D., Electrical Engineering; University of Connecticut, 1986  
Machine Learning, Kernel Machines, Neural Networks, Neuro-Evolution, Pattern Recognition and applications  
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**Xun Gong**
Associate Professor  
Ph.D., Electrical Engineering; University of Michigan at Ann Arbor, 2005  
RF Microwave Millimeter wave Circuits, Integrated 3D High Q Resonators and Filters, Integrated Antennae  
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**Michael Haralambous**
Assistant Professor  
Ph.D., Electrical Engineering; George Washington University, 1978  
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**Yier Jin**
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Secure, trusted, and reliable processor and ASIC design, Cyber security and cryptography, Proof-carrying code and its implementation in hardware IP core transactions  
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Professor and Chair of ECE
Ph.D., Electrical Engineering; Georgia Institute of Technology, 1990
Controls system theory, robotics and automation, power systems
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Associate Professor and Undergraduate Program Coordinator
Ph.D., Electrical Engineering; University of Central Florida, 1989
Surface acoustic wave SAW device modeling, SAW device computer aided design, transversal filter design theory
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Ph.D., Electrical Engineering; University of Illinois at Urbana-Champaign, 1972
Optimization and control signal processing, telecommunication and knowledge based signal processing and control
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Kalpathy Sundaram
Professor
Ph.D.; Electrical Engineering Indian Institute of Technology, 1980
Microelectronics, optoelectronic materials, thin films micromachining
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Assistant Professor
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Juin J. Liou
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Micro nanoelectronics, computer aided design, RF device modeling and simulation
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W. Linwood Jones
Professor
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TEACHING & RESEARCH FACULTY

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University Iowa State, 2010

Wireless networks, mobile computing, pervasive computing, human-computer interaction, innovative computing

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Lecturer
Ph.D; Electrical Engineering
University of Mississippi, 2010

Linear phase FIR filter design using the Bayesian inference framework, Bayesian Time-Frequency Analysis, Room Acoustics, Landmine Detection

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Shady Elashhab
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Ph.D; Electrical and Computer Engineering
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Robust and Optimal Control of Dynamical System

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Azza Fahim
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Ph.D; Electrical Engineering
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Electromagnetic analysis of electric machines, Finite-element methods in the analysis and design of electric machine

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Alireza Seyedi
Visiting Assistant Professor
Ph.D.; Electrical Engineering
Rensselaer Polytechnic Institute, 2004

Convergence of Control and Communications, Control and Decision, Communications

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Lecturer
Ph.D; Electrical Engineering
The George Washington University, 2010

Computer Architecture & Networking

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VISITING RESEARCH FACULTY & JOINT FACULTY

Georgios Anagnostopoulos
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Machine Learning, Artificial Neural Networks, Decision Trees, Evolutionary Computation, Data Mining
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Thin-film solar cells, study of light-matter interactions in artificially structured metal/dielectric structures (metamaterials, plasmonic nanostructures),
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Professor Emeritus
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Arizona State University, 1971
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Secondary Joint Faculty
Thin-film solar cells, study of light-matter interactions in artificially structured metal/dielectric structures (metamaterials, plasmonic nanostructures),
Debasish.Chanda@creol.ucf.edu
Faculty Hours

National Science Foundation CAREER Award
Xun Gong
John Shen
Azadeh Vosoughi
Jun Wang

Department of Energy Young Investigator Award
Jun Wang

External Awards and Honors

2012 IGARSS Outstanding inter-active Paper Award
Linwood Jones

Distinguished Alumni Award, St. John University
Juin Liou

Fellows of Technical & Honor Societies

American Association for the Advancement of AAAS
Zhihua Qu
Issa Batarseh
Marwan Simaan

IEEE Fellows
Issa Batarseh
Linwood Jones
Juin J. Liou
Donald Malocha
Wasfy Mikhael
Zhihua Qu
Marwan Simaan
**Chair, Professorships and Faculty Fellows**

- Marwan Simaan, Florida 21st Century Chair Professor
- Zhihua Qu, SAIC Professor
- Michael Georgiopoulos, Martin/St. Laurent Professor
- Xun Gong, CAE Link Faculty Fellow
- Mingjie Lin, SAIC Faculty Fellow
- Juin J. Liou, Analog Devices Faculty Fellow
- Jun Wang, Charles N. Millican Faculty Fellow
- Thomas Wu, National Research Council (AFRL) Senior Research Fellow

**Services of Professional Societies**

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Professional Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aman Behal</td>
<td>• Associate Editor, 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems, Vilamoura, Algarve, Portugal</td>
</tr>
<tr>
<td>Ronald Demara</td>
<td>• Associate Editor, IEEE Transactions on Computers</td>
</tr>
<tr>
<td>Juin J. Liou</td>
<td>• Editorial Advisory Board, Advances in Microelectronic Engineering</td>
</tr>
<tr>
<td>Donald Malocha</td>
<td>• Associate Editor, IEEE Ultrasonics, Ferroelectrics and Frequency Control Society</td>
</tr>
<tr>
<td>Zhihua Qu</td>
<td>• Associate Editor, IEEE ACCESS</td>
</tr>
<tr>
<td></td>
<td>• Advisory Board, International Journal of Robotics and Automation</td>
</tr>
<tr>
<td>Alireza Seyedi</td>
<td>• Associate Editor, IEEE Signal Processing Letters (2012-present)</td>
</tr>
<tr>
<td>Marwan Simaan</td>
<td>• IEEE Access Editorial Board</td>
</tr>
<tr>
<td></td>
<td>• IEEE Systems Journal</td>
</tr>
<tr>
<td>Azadeh Vosoughi</td>
<td>• Associate Editor for the IEEE Wireless Communications Transactions</td>
</tr>
<tr>
<td></td>
<td>• Associate Editor, IEEE Signal Processing Letters</td>
</tr>
<tr>
<td></td>
<td>• Associate Editor, IEEE Signal Processing Magazine</td>
</tr>
<tr>
<td>Thomas Wu</td>
<td>• Associate Editor, IEEE Transactions on Industrial Applications</td>
</tr>
</tbody>
</table>
University Honors and Awards

Linwood Jones
Juin Liou
Parveen Wahid
Jun Wang
Arthur Weeks
Kalpathy Sundaram

2012 Faculty Excellence in Mentoring Doctoral Students
2012 Dean’s Research Professorship Award
2012 Women of Distinction: Excellence in Mentoring Award
2012 Dean’s Research Professorship Award
2012 Nominated for Outstanding Undergraduate Teacher
2013 Professional Service Award

1.2 STAFF

ADMINISTRATIVE AND TECHNICAL STAFF

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Position</th>
<th>Contact Info</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
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<td>Office: HEC-439E</td>
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<tr>
<td>Grissel Guzman-David</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Office: HEC-346D</td>
<td></td>
</tr>
<tr>
<td>Charlese Hilton-Brown</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Office: HEC-345F</td>
<td></td>
</tr>
<tr>
<td>Melissa Occil</td>
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<td></td>
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</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td>Office: HEC-346C</td>
<td></td>
</tr>
</tbody>
</table>
2. Academic Programs

2.1 Enrollment and Degrees Awarded

BSEE & BSCpE

The mission of the Department of Electrical Engineering and Computer Science is to educate undergraduate and graduate students to become highly skilled in the principles and practices of computer engineering (CpE) and electrical engineering (EE). The Electrical Engineering Program is to develop and disseminate the theory and methods for the design, analysis, and implementation of the principles and practices in Electrical Engineering; and Computer Engineering Program is to develop and disseminate the theory and methods for the design, analysis, implementation, and improvement of computer hardware, software, and systems.

Enrollment in ECE Division undergraduate programs for Fall 2012 totaled 1105 students as listed below:

- BSEE Enrollment = 660
- BSCpE Enrollment = 445
The chart below shows undergraduate enrollment in EE and CpE starting Fall 2007 – Fall 2012.

The ECE Division awarded 157 BSEE and 75 BSCpE for AY 2012 -2013 as listed below:

- **BSEE**: Degrees Awarded = 157
- **BSCpE**: Degrees Awarded = 75

Total Undergraduate Degrees awarded in ECE = 232

The chart below shows the degrees awarded for EE and CpE from AY 2009 – 2013.

(Source: UCF Pegasus Mine Portal)
MSEE, MSCpE, PH.D. EE, PH.D. CpE

Fall 2012 Enrollment in ECE Division graduate programs totaled 267 students as listed below:

- MSEE Enrollment = 73
- MSCpE Enrollment = 41
- Ph.D. EE Enrollment = 111
- Ph.D. CpE Enrollment = 42

The chart below shows Graduate enrollment in EE and CpE starting Fall 2008 – Fall 2012.

(The Source: UCF Pegasus Mine Portal)

The ECE Division awarded 50 Masters degrees and 23 Ph.D. degrees as listed below:

Total Masters Degrees awarded in ECE = 50

- M.S.E.E: Degrees Awarded = 32
- M.S.CpE: Degrees Awarded = 18

The chart below shows M.Sc. Degrees conferred from 2010-2013.

(The Source: UCF Pegasus Mine Portal)
Total Ph.D. Degrees awarded in ECE = 23
- Ph.D.E.E Degrees Awarded = 20
- Ph.D.CpE: Degrees Awarded = 3

The chart below shows Ph.D. Degrees Conferred from 2010-2013.

(Source: UCF Pegasus Mine Portal)

### 2.2 Courses Taught during AY 2012 - 2013

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPUTER ARCHITECTURE</td>
<td>ABICHAR</td>
</tr>
<tr>
<td>ENG ANALYSIS &amp; COMPUTATION</td>
<td></td>
</tr>
<tr>
<td>FUNDAMENTALS OF ELECTRIC POWER</td>
<td>AMOS</td>
</tr>
<tr>
<td>RANDOM PROCESSES II</td>
<td>ATIA</td>
</tr>
<tr>
<td>LINEAR CONTROL SYSTEMS</td>
<td>BEHAL</td>
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<tr>
<td>INTRO TO MOD &amp; ROBUST CONTROL</td>
<td></td>
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<tr>
<td>SYSTEM IDENTIFICATION</td>
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<tr>
<td>ELECTRONICS I</td>
<td>CHAN CH</td>
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<td>ELECTRICAL NETWORKS</td>
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<td>CIRCUIT ANALYSIS</td>
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<td>DIGITAL SIGNAL PROCESSING FUND</td>
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<tr>
<td>COMPUTER COMMUNICATIONS</td>
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<tr>
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<td>DEMARA</td>
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<td>DIGITAL SYSTEMS</td>
<td>ELASHHAB</td>
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<td>NETWORKS AND SYSTEMS</td>
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<td>ELECTROMAGNETIC FIELDS</td>
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<td>PRINCIPLES OF ELECTRICAL ENG</td>
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<td>ELECTRICAL NETWORKS</td>
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<td>IMAGE PROCESSING</td>
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<tr>
<td>INTRO TO NEURAL NETWORKS</td>
<td>GEORGIOPoulos</td>
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<tr>
<td>ELECTROMAGNETIC FIELDS</td>
<td>GONG</td>
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<tr>
<td>MICROWAVE ENGINEERING</td>
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<tr>
<td>Course Title</td>
<td>Instructor</td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>RF &amp; MICROWAVE COMMUNICATIONS</td>
<td></td>
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<tr>
<td>ENGINEERING HONORS SEMINAR</td>
<td>GONZALEZ</td>
</tr>
<tr>
<td>NETWORKS AND SYSTEMS</td>
<td>HARALAMBOUS</td>
</tr>
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<td>LINEAR CONTROL SYSTEMS</td>
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<tr>
<td>FULL-CUSTOM VLSI DESIGN</td>
<td>JIN</td>
</tr>
<tr>
<td>SATELLITE COMMUNICATIONS</td>
<td>JONES</td>
</tr>
<tr>
<td>ADV TP IN ELECTROMAG &amp; MICROWV</td>
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<tr>
<td>INTRODUCTION TO RADAR SYSTEMS</td>
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<tr>
<td>BIOMEDICAL NANOTECHNOLOGY</td>
<td>KAPOOR</td>
</tr>
<tr>
<td>FIELD PROGRAM GATE ARRAY FPGA</td>
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<td>CUR TOPICS IN PARALLEL PROCESS</td>
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<td>HDL IN DIGITAL SYSTEMS DESIGN</td>
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<td>ADVANCED SEMICONDUCT DEVICE I</td>
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<td>ADVANCED TOPICS IN POWER ENG</td>
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<td>FUNDAMENTALS OF ELECTRIC POWER</td>
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<td>SEMICONDUCTOR DEVICES I</td>
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<tr>
<td>ANALOG FILTER DESIGN</td>
<td>MIKHAEL</td>
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<td>DIGITAL SIGNAL PROCESSING FUND</td>
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<td>ANTENNA ANALYSIS AND DESIGN</td>
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<td>CMOS ANALOG &amp; DIG CIRCUIT DSGN</td>
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<td>ELECTRONICS I</td>
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<td>SEMICONDUCT DEVICE MOD &amp; SIM</td>
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### 2.3 PhD DISSERTATIONS & MC THESIS & HONORS THESIS

Ph.D. Dissertations during the Academic Year 2012 – 2013 reporting period are listed below:

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Program</th>
<th>Committee Chair name</th>
<th>Thesis/Dissertation Title</th>
</tr>
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<tbody>
<tr>
<td>Ahmad</td>
<td>Mohammad</td>
<td>Computer Engineering PhD</td>
<td>Ratan Guha</td>
<td>Measuring the evolving Internet ecosystem with exchange points</td>
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<td>Zubair</td>
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<tr>
<td>Banaei</td>
<td>Seyed</td>
<td>Electrical Engineering PhD</td>
<td>Sasan Fathpour</td>
<td>Polymer Optical Fibers for Luminescent Solar Concentration</td>
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<tr>
<td>Brawner</td>
<td>Keith</td>
<td>Computer Engineering PhD</td>
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<td>Modeling Learner Mood in Realtime through Biosensors for Intelligent Tutoring Improvements</td>
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<tr>
<td>Chen</td>
<td>Li</td>
<td>Electrical Engineering PhD</td>
<td>Parveen Wahid</td>
<td>Non Linear Distortion Characterization and Modeling of SAW Duplexers.</td>
</tr>
<tr>
<td>Name</td>
<td>Advisor</td>
<td>Degree</td>
<td>Project Details</td>
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<tr>
<td>Chen Shuyu</td>
<td>Jiann-Shiun Yuan</td>
<td>Electrical Engineering PhD</td>
<td>rf power amplifier and oscillator design for reliability and variability</td>
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<tr>
<td>Cui Qiang</td>
<td>Juin Liou</td>
<td>Electrical Engineering PhD</td>
<td>On-Chip Electro-Static Discharge (ESD) Protection for Radio-Frequency Integrated Circuits</td>
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<tr>
<td>Horine Brent</td>
<td>Damla Turgut</td>
<td>Electrical Engineering PhD</td>
<td>X-ray Radiation Enabled Cancer Detection and Treatment with Nanoparticles</td>
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<tr>
<td>Hossain Mainul</td>
<td>Ming Su</td>
<td>Electrical Engineering PhD</td>
<td>Complex-valued adaptive digital signal enhancement for applications in wireless communication systems</td>
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<tr>
<td>Liu Ying</td>
<td>Wasfy Mikhael</td>
<td>Electrical Engineering PhD</td>
<td>Design, Characterization and Analysis of Electrostatic Discharge (ESD) Protection Solutions in Emerging and Modern Technologies</td>
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<tr>
<td>Liu Wen</td>
<td>Juin Liou</td>
<td>Electrical Engineering PhD</td>
<td>Microstrip Patch Electrically Steerable Parasitic Array Radiators</td>
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<tr>
<td>Luther Justin</td>
<td>Xun Gong</td>
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<tr>
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<td>Ultrafast Laser Material Processing For Photonic Applications</td>
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<tr>
<td>Ramme Mark</td>
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<td>Electrical Engineering PhD</td>
<td>Life Long Learning in Sparse Learning Environments</td>
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<tr>
<td>Reeder John</td>
<td>Michael Georgiopoulos</td>
<td>Computer Engineering PhD</td>
<td>High Temperature Materials Characterization and Sensor Application</td>
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<tr>
<td>Ren Xinhua</td>
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<tr>
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<td>Design and Characterization of High Temperature Packaging for Wide-Bandgap Semiconductor Devices</td>
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<tr>
<td>Haddad</td>
<td>Ghaith</td>
<td>Computer Engineering PhD</td>
<td>Gary Leavens</td>
<td>Bootstrapping Cognitive Radio Networks</td>
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<tr>
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<td>High Performance Low Voltage Power MOSFET for High-Frequency Synchronous Buck Converters</td>
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<td>Monolithically Integrated Broadly Tunable Light Emitters based on Selectively Intermixed Quantum Wells</td>
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<td>Zakariya Abdullah</td>
<td>Patrick Likamwa</td>
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<td>A high efficiency module solar system architecture</td>
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<td>Zhang Qian</td>
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MS Thesis during the reporting period are listed below:
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<tr>
<td>Alabri</td>
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<td>Zhihua Qu</td>
<td>Distributed Extremum Seeking and Cooperative Control for Mobile Cooperative Communication Systems</td>
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<td>Aselebagh</td>
<td>Shadi</td>
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<td>Cooper</td>
<td>Douglas</td>
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<td>Wasfy Mikhael</td>
<td>Speech Detection using Gammatone Features and One-Class Support Vector Machine</td>
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<td>Li</td>
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<td>Somani</td>
<td>Utsav</td>
<td>Electrical Engineering MSEE</td>
<td>Issa Batarseh</td>
<td>Efficiency Optimization of LLC Topology and Phase Skipping Control of Three Phase Inverter for PV Applications</td>
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<td>Vega-Nevarez</td>
<td>Juan</td>
<td>Electrical Engineering MSEE</td>
<td>Zhihua Qu</td>
<td>Online Path Planning and Control Solution for a Coordinated Attack of Multiple Unmanned Aerial Vehicles in a Dynamic Environment</td>
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2.4 STUDENT AWARDS RECEIVED

Scholarship Award

**AT&T Wireless Scholarship $1000**
Taylor Stewart

**Boeing Scholarship $2000**
Kristen Berman
Gustavo Valencia

**Daniel D. Hammond Scholarship $1000**
Shawn Mahon

**David & Jane Donaldson Scholarship $2500**
Wen Liu

**Frank Hubbard Engineering Scholarship $1000**
Ivette Carreras

**Professor James Beck Scholarship $500**
Laura Cano

**Progress Energy Scholarship $2000**
Goergiy Brussenskiy
Carlos Gonzalez
Benjamin Goolsby
Nicholas Heintz
Yuval Mor
Joseph Nichols
Andrea Solano

**NACME Scholarship**
Anthony Adu - $1250
Roberto Amaya - $2500
Evan Brown - $2500
Alphonso Carty - $2500
Dominique Benito - $2375
Robert Simon - $2375

2.5 COURSE & PROGRAM DEVELOPMENT

The following are Course and Program changes during the calendar year 2012 – 2013.

Undergraduate Education

EEL 4768 Computer Architecture – from 4 to 3 credits; lab fee FROM $30 to $0
EEL 3004 Electrical Networks – Removal of Laplace in the description; added a recitation
EEL 3004H Electrical Networks Honors - Course for electrical and computer engineering students who are honors in the major; added a recitation
EEL 4436C Microwave Engineering – The semester offering of the course was changed from Fall Odd to Fall odd and even
EGN 3211 Engineering Analysis and Computation - added as a required course for EE and CpE curriculum
EGN 3420 Engineering Analysis - removed from the EE curriculum
EE and CpE: All students must take at least 24 hours from the EECS dept. in order to maintain the integrity of the BS CpE and EE degrees.
Change CpE degree technical electives from 6 to 9 because of the credit hour decrease for COP 303C, 4431C, and EEL 4768C.
Updated the Intelligent Robotic Systems Minor

**Graduate Education**

EEL 5780 Wireless Networks – remove summer term offerings
EEL 5704 Computer Aided Logical Design – remove summer term offerings
EEL 6XXX/6938 Modern EDA Algorithms in VLSI – updated prerequisite to EEE 3342C
EEL 5722C Introduction to FPGA Technology - from 3(3,1) to 3(3,3)
EEL 5439C RF and Microwave Communications – preq EEL 4436C from 3(2,1), 4(3,1) to 4(3,3); odd/even spring
EEL 5437C Microwave Engineering - The semester offering of the course was changed from (from odd semesters to even semesters)

**2.6 Instructional Laboratories**

**Teaching Laboratories**

**Undergraduate/Graduate ECE Teaching Laboratories:**

<table>
<thead>
<tr>
<th>Name of Lab</th>
<th>Course Name</th>
<th>Location</th>
<th>Square Feet</th>
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</thead>
<tbody>
<tr>
<td>Communication Laboratory</td>
<td>EEL3552, EEL4140, EEL4515</td>
<td>ENG I 471</td>
<td>959sf</td>
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<tr>
<td>Computer Systems Laboratory</td>
<td>EEL3801, EEL4768</td>
<td>HEC 338</td>
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<tr>
<td>Digital Circuit Laboratory</td>
<td>EEE3342, EEL4742</td>
<td>ENG I 257</td>
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<tr>
<td>Electronics Laboratory</td>
<td>EEL3123, EEL3307, EEL4309</td>
<td>ENG I 474</td>
<td>1305sf</td>
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<tr>
<td>Microwave Laboratory</td>
<td>EEL 4436, EEL 5437, EEL 5439, EEL 6425</td>
<td>ENG I 461</td>
<td>1305sf</td>
</tr>
<tr>
<td>Senior Design Laboratory</td>
<td>EEL 4914, EEL 4915</td>
<td>ENG I 456</td>
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<tr>
<td>Medical Robotics Laboratory</td>
<td>EEL5690</td>
<td>HEC 302</td>
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<tr>
<td>ECE PC Laboratory</td>
<td>EEL 5332, EEL 5355, EEL 5356</td>
<td>ENG I 163</td>
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<tr>
<td>Cleanroom</td>
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<tr>
<td>Microfabrication and Electronic Device Test Facility</td>
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2.7 Lectures and Seminars

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<th>Guest Speaker</th>
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<tr>
<td>Adelmo Ortiz-Conde</td>
<td>IEEE’s CAS/ED Venezuelan</td>
<td>A Review of Recent MOSFET Threshold Voltage Extraction Methods</td>
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<tr>
<td></td>
<td>Chapter</td>
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<tr>
<td>Anura Jayasumana</td>
<td>Colorado State University</td>
<td>Virtual Coordinate Based Techniques for Sensor Networks</td>
</tr>
<tr>
<td>Ahmad Mirzaei</td>
<td>Broadcom Corporation</td>
<td>Reconfigurable Fully-Integrated RF Receiver Front-Ends</td>
</tr>
<tr>
<td>Kidong Park</td>
<td>University of Illinois at Urbana-Champaign</td>
<td>MEMS Technologies for Mechanical Characterization of Adherent Cells</td>
</tr>
<tr>
<td>Reza Abdolvand</td>
<td>Oklahoma State University</td>
<td>Thin Film Piezoelectric-on-Substrate Resonant MEMS: State of the Art and Future Directions</td>
</tr>
<tr>
<td>Alireza Seyedi</td>
<td>University of Central Florida</td>
<td>Dynamics and Control of Complex Networks: Analysis, Design and Scaling Laws</td>
</tr>
<tr>
<td>Yufeng Wang</td>
<td>Huawei Technology</td>
<td>Opportunistic Relaying in Wireless Networks</td>
</tr>
<tr>
<td>Tara Javidi</td>
<td>University of California, San Diego</td>
<td>Visual Information Acquisition, Noisy Search, and Active Hypothesis Testing</td>
</tr>
</tbody>
</table>

3. Research

3.1 Areas of Research

Computer Systems and VLSI
- Data-intensive High Performance Computing, Massive Storage and File System, I/O Architecture
- Computer Architecture and Evolvable Hardware
- Secure, Trusted, and Reliable Processor and ASIC Design; Cyber Security and Cryptography

Cyber-Physical Systems (Communication, Controls, Signal Processing, and Energy Systems)
- Networked Systems, Cooperative Control, Optimization and Games
- Autonomous Robotic Vehicles, Medical and Assistive Robotics
- Smart Grids, Distributed Generation and Optimization, Protection and Control
- Biomedical Devices and Control
- Digital Signal Processing,
- Detection and Estimation, Communication Theory, Cognitive Radios and Networks
- Wireless Communication and Sensor Networks,
- Machine Learning, Artificial Neural Networks, Distributed Decision
Electromagnetics
- Remote Sensing, Satellite Communications
- Microwave Sensors, Antennas, Phased Arrays and Integrated RF

Micro- and Nano-Systems
- Power electronics, Power Semiconductor devices and ICs
- Optoelectronic Materials, Thin Films Micromachining

3.2 Research Laboratories

Advanced Microfabrication Support Laboratory – EGN I 122
Donald Malocha and Kalpathy Sundaram
This is a small laboratory used for prototyping and device integration. The laboratory can build small packages, test fixtures, microblasting of wafers. The room also provides support for repair and maintenance of the ECE cleanroom facility.

Antennas and Microwave Laboratory – HEC 428 & HEC 431
Xun Gong and Parveen Wahid
At ARMI Laboratory, we are performing research in applied electromagnetics and microwave engineering. We have active projects on the development of novel low-profile wireless sensors for harsh environment applications. Our research interests also include phased array antennas and beamsteerable reflectarray antennas. We have been one of the pioneers in developing integrated filter/antennas and endeavor to further advance this technology. Finally, tunable and flexible microwave devices such as phase shifters, filters and antennas are under development at ARMI Laboratory to be employed in the next-generation conformal and deployable telecommunications systems.

Applied Electromagnetics Lab – HEC 203
Open for All Research Assistants
We focus on investigating advanced electric machinery for aerospace, industry, geology, medical and defense applications. Ongoing projects include high power density aircraft synchronous generator, switch reluctance motor for renewable energy system, high temperature permanent magnet motor, super high speed electric machine, low cost ultra-compact micro inverter, high performance electromechanical actuator, etc.

Artificial Intelligence Lab – HEC 303
Michael Georgiopoulos, Fernando Gomez, Annie Wu
Conduct research in many aspects of AI, but are particularly interested in the following areas of Natural Language Processing.

- semantic interpretation
- syntactic parsing / scope
- word sense disambiguation
- sentiment analysis
- automatic discovery of selectional restrictions
- acquisition of knowledge from the Web or large corpora
- supervised approaches to semantic role and verbal predicate labeling

**Assistive Robotics Lab – Research Pavilion 494**
**Aman Behal**

Research is focused on the development of novel human-robot interface (HRI) designs to facilitate ADL (activities of daily living) tasks for individuals in wheelchairs navigating through arbitrary unstructured environments.

**Central Florida Remote Sensing Laboratory – HEC 349**
**W. Linwood Jones**

The Central Florida Remote Sensing Laboratory of the Electrical & Computer Engineering Department performs state-of-the-art research in the field of microwave remote sensing of atmosphere, ocean and land geophysical parameters. As electrical engineers, we participate in the development of advanced microwave remote sensing instruments and measurement techniques for the National Aeronautics and Space Administration (NASA), other federal governmental agencies and the U.S. aerospace industry. These microwave sensors have applications for environmental monitoring from earth-based, airborne and satellite platforms. Also, we participate on international science teams to develop geophysical data interpretation algorithms using the electrical engineering principles of electromagnetic fields theory, communications theory and digital signal processing. Current satellite remote sensing projects are: Ocean Vector Wind Science Team, Precipitation Measurements Mission Science Team, and Sea Surface Salinity Science Team.

**Computer Systems & Architecture Laboratory - HEC 242**
**Ronald DeMara, Mark Heinrich, Mingjie Lin, and Yier Jin**

In the Computer Systems and Architecture Laboratory, we are performing research in Reprogrammable Logic Devices, Evolvable Hardware, Multicore Processors, and Hardware Security. Research in Reprogrammable Logic Devices and Evolvable Hardware is focused on autonomously reconfigurable Field Programmable Gate Arrays (FPGA) devices in applications including signal processing and mission-critical processing systems. Novel FPGA architectural concepts are being developed to achieve survivability while sustaining nominal run-time throughput, despite unanticipated device defects using Adaptive Group Testing, Resource Fitness Escalation, and Consensus techniques. Multicore computer architecture research is focused on memory and cache protocols and their performance, multiprocessor simulation methodologies. It also covers hardware/software co-design ranging from mobile and low-power architectures such as Energy-efficient Embedded Computing to Scalable Web Services. Hardware Security research is focused on hardware Trojan Detection in digital and mixed-signal designs such as Wireless Cryptographic ICs. Resources range from FPGA development boards to Berkeley Emulation Engine testbeds, servers, and simulation tools.

**Digital Signal Processing Laboratory – HEC 342**
**Wasfy Mikhael, George Atia and Azadeh Vosoughi**
Research is conducted in digital signal processing of one and multidimensional signals and systems. Topics include Adaptive signal processing with communications applications such as IQ mismatch compensation, adaptive beam Forming, channel identification, noise cancellation, etc…., efficient feature extraction of speech and image signals With applications such as signal compression, model and transform based signal representation, facial recognition, speaker Recognition, human action recognition, etc…., sparse signal processing with applications such as compressive sensing, network tomography, group testing, etc... and adaptive algorithms for real and complex signal and systems with applications such as error correction in interleaved analog to digital converters, interference suppression, signal Separation, signal enhancement, etc….

Florida Power Electronics Center – Research Park
Issa Batarseh

The Center's mission is to develop advanced energy conversion technologies for solar and other renewable sources through multidisciplinary engineering research and education in the field of power electronics. The research vision is to achieve significant improvements in power density, efficiency, reliability, and cost-effectiveness of electric energy processing systems by developing innovative topology and control techniques, power semiconductor devices, passive components, and packaging and system integration techniques.

Intelligent Systems Laboratory – HEC 331
Michael Georgiopoulos and Ronald Demara

The Intelligent Systems Laboratory, or ISL, represents a group of faculty and students undertaking high quality research in intelligent systems. The ISL is part of the School of Electrical Engineering and Computer Science at the University of Central Florida in Orlando, FL. We take a broad interpretation of the term intelligent, but the large majority of our work involves artificial intelligence and all the technologies derived therefrom. Our focus is in using such technologies to build systems that encompass both hardware and software, and are of practical use in human endeavors.

Medical Robotics Laboratory – HEC 302
Zhihua Qu, Eytan Pollak, and Vipul Patel

The Medical Robotics Laboratory is to bring together a team of faculty from UCF and local hospitals, to educate our students the state-of-art techniques in medical robotic surgery, and to conduct multidisciplinary research in tele-surgery, mixed and augmented virtual reality, surgical simulation and rehearsal, virtual mentoring, and other technologies of medical robotics.

Micro/Nanoelectronics Laboratory – HEC 401
Juin J. Liou

Electrostatic discharge (ESD) is an event in which a finite amount of charge is transferred from one object to the other. The electrostatic charge generation results from either the triboelectrification process (i.e., transfer of electrons when two different materials are in contact) or the inductive process (i.e., separation of positive and negative charges due to an electric field). If a microchip or electronic system is subject to the ESD, then the huge current associated with the ESD event can likely damage the microchip and cause malfunction to the electronic system. It is estimated that about 35% of all damaged microchips are ESD related, resulting in a loss of revenue of several hundred million dollars in the global semiconductor industry every year.
The Micro/Nanoelectronics Laboratory at UCF has been working on ESD research work for more than 15 years, and the lab possesses several ESD specific equipment which can be used to conduct the testing and characterization of ESD protection structures. The group is aiming to design and implement effective and robust ESD protection solutions in Si CMOS, Si BiCMOS, SiGe, GaAs, and emerging technologies. Current industry partners include Analog Devices, Intersil, Maxim, and National Semiconductor.

**Nano/MEMS Laboratory – HEC 406**  
**Kalpathy Sundaram**

This laboratory is devoted to thin film materials and nano/microelectronic device characterization. Materials characterization focuses on optical properties of thin films using a Varian UV-Visible spectrophotometer. Resistivity studies of thin films can be performed from low temperature (20 K) to high temperatures up to 523 K. Device characterization include MOS CV and I-V studies using HP dedicated systems.

**Nanoelectronics Reliability Laboratory – HEC 425**  
**Jiann S.Yuan**

The Nanoelectronics Reliability Laboratory is actively engaged in research of CMOS device and circuit reliability. Our radio-frequency integrated circuit design addresses device physics and reliability issues in the circuit operation environment. Process variability, temperature fluctuation, and supply voltage variations are accounted for in the design of wireless transceiver circuits, such as low noise amplifiers, voltage-controlled oscillators, and power amplifiers.

**Instrumentation Laboratory – HEC 404**

The ECE Division of the Department of Electrical Engineering and Computer Science operates an instrumentation laboratory in HEC-404 that is intended to serve as a common resource for the research needs of all faculty in electrical and computer engineering, especially new faculty just starting their research activities. The laboratory has many pieces of test equipment including a mixed signal oscilloscope, a 4-channel digital storage oscilloscope, a 2-channel digital real-time oscilloscope, all of which are Tektronix. In addition, there is an arbitrary function generator, DC power analyzer, AC milli-voltmeter, and a programmable digital multimeter. Faculty and their graduate students may use this facility at any time to meet their needs for test and measurement. By providing equipment and laboratory space that is of common need for all faculty researchers, the burden to equip an individual researcher’s laboratory with seldom used but necessary test equipment is eliminated. This is especially important for new faculty that are just beginning to establish their research activities.

**Power Systems Laboratory – HEC 263**

In the Power Systems lab we are working on different aspects of power systems including:
- Optimal operation of distribution systems with high penetration of renewable energies
- Stochastic modeling of power systems
- Protection of PV farms
- Real-time monitoring of distribution systems

**Robotics Laboratory – EGN I 364**  
**Zhihua Qu**

The 400-sf Robotics Laboratory, housed at ENG I 364, conducts research in robotic manipulation, motion planning, and control. Topics include cooperative control of unmanned vehicles, teleoperation, coverage control, and novel energy-harvesting devices. Applications include medical surgical robots, mobile robotic platforms, and ocean wave energy generation devices.

**Signals and Communication Laboratory – HEC 334**  
**Lei Wei and Azadeh Vosoughi**
The Advanced Communication Laboratory at Department of Electrical and Computer Engineering, The University of Central Florida, conducts research in the areas of Wireless Communications, Emergency Communications, Error Control Coding, and Application of advanced coding theory in Bio-inspired system design, called General Purpose Representation and Association Machine (GPRAM). The Lab obtained funds from various sources, including NSF, US Homeland Security Department, FDOE, NASA/FSGC, US ARMY. Currently, his group is fully focusing on GPRAM machine prototype development.

**Software Systems – HEC 231**  
**Jun Wang**

Our Computer Architecture and Storage System (CASS) laboratory has primary research interests which cover a wide spectrum in the areas of high performance and computer systems. A common thread among our research projects focuses on fast data accesses and resource sharing with cost- and energy-efficient management at different levels of memory and storage hierarchies in supercomputer, parallel and distributed computer systems. More recently, CASS research interests cover the areas of interdisciplinary computing, computer architecture, and low-power computing. A significant complimentary thread among CASS extensive research projects emphasize at developing new software tools and hardware platforms to stimulate advances in science and engineering research, where large digital data collections are increasingly prevalent. CASS research projects have been sponsored by several federal funding agencies such as National Science Foundation, Department of Energy, and NASA. In the last five years, the total amount of research funding is approximately $3.03M.

**Solid State Devices Laboratory – EGN I 234**  
**Donald Malocha**

The solid state devices and systems laboratory (SSDSL) performs experimental and solid-state research in a broad range of technologies. The laboratory has been operational for over 25 years and has established a network of partnerships with industry and government groups. The laboratory has facilities for RF device probing for characterization in the 100 kHz to 6 GHz range, various vector and scaler analyzers, printed circuit board design and fabrication, wafer dicing and die bonding, and custom analysis, design, synthesis and measurement computer systems. The research emphasis of the laboratory is in solid-state bulk and surface acoustic wave technology for communication and sensors. In 2000, we were the 1st US group to fully characterize LGS, LGN and LGT piezoelectric material parameters over temperature, the group has invented and patented embodiments of RF orthogonal frequency coded (OFC) SAW tag and sensors, and is continuing research on passive wireless system and technology solutions for sensors. In conjunction with ECE’s microfabrication facilities, submicron devices can be produced, from mask to packaging, in a quick turn-around capability. Devices can then be fully characterized, tested, packaged and integrated into a wireless test system.

**Systems & Controls Laboratory – HEC 434**  
**Zhihua Qu, Marwan Simaan, and Michael Haralambous**

The 400-sf Controls Laboratory, housed at HEC 434, conducts research in optimization and controls of cyber-physical systems. Topics include identification of dynamic systems, estimation of distributed networks, distributed cooperative control of nonlinear heterogeneous systems, distributed game algorithms, and optimization of network topologies. Applications include biomedical devices, autonomous vehicle systems, solar-energy grid-tied systems, smart grids, and energy systems.
3.3 Publications

Books


Book Chapters


Journal Publications


Conference Papers


40


### Plenary and Invited Talks


**Patents**


Patents Application


### 3.4 Research Funding

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<td>US-Jordan Cooperative Science: Chaos Theory on Micro-Inverters for Photovoltaic (PV) Systems</td>
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<td></td>
<td>REU Supplement to Collaborative Research: Towards Life-like Computer Interfaces that Learn</td>
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<td></td>
<td>I3: The UCF Community Embraces the Knowledge-Based Economy</td>
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<td>UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM</td>
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<td>Collaborative Research: RET in Engineering and Computer Science Site: Research Experiences for Teachers focused on Applications of ImagEs and SiGnals In High Schools (AEGIS)</td>
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<td>STEP Workshop: WORKStep</td>
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<td>BST-Inspired Flexible and Beamsteerable Reflectarray Antennas</td>
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<td>CAREER: Data-Intensive HPC Analytics: A systems approach through extended interfaces, data restructuring and data-centric scheduling</td>
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<td>CSR: Small: DSA-Cloud: Data Semantics Aware Clouds for High Performance Analytics</td>
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<td></td>
<td>Improved Aquarius Salinity Retrievals using Auxillary Products from the Microwave Radiometer</td>
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<td></td>
<td>Inter-Satellite Radiometric Calibration for the GPM Constellation</td>
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<td>Improved Active/Passive Ocean Vector Wind Retrievals</td>
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NASA Shared Services Center (NSSC)
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<th>Organization</th>
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<td>Hardware-Assisted Large-Scale Neuroevolution for Multiagent Learning</td>
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<td>QinetiQ North America</td>
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<td>PI: Malocha, Dr. Donald C</td>
<td>SAW 915 MHz OFC Temperature Sensors</td>
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<td>Hydrogen Wireless Sensors and Software Development 2012</td>
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<td>Development of Surface Acoustic Wave Sensor Devices and System</td>
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<td>Design of Next Generation Advanced Permanent Magnet Reluctance Machine for Renewable Energy Application</td>
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<td>Advanced Power Electronics Corporation (APECOR)</td>
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<td>NASA SBIR Phase II: High-Temperature, Wirebondless, Ultra-Compact Wide Bandgap Power Semiconductor Modules for Space Power Systems</td>
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<td>PI: Behal, Dr. Aman</td>
<td>Development of an Intelligent Assistive Robotic System for Individuals with Multiple Sclerosis</td>
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<td>PI: Gong, Dr. Xun</td>
<td>1-110 GHz, Two Aperture Electronically Scanned Array for Electronic Attack</td>
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<td>Power-generation buoy and deep-sea monitoring system</td>
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<td>Observations of Ocean Surface Wind Speed and Rain Rate with the Hurricane Imaging Radiometer (HIRAD)</td>
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<td>Maxim Integrated Products, Inc.</td>
<td>Development of Standardized Methodology to Design and Optimize On-Chip Level Electrostatic Discharge (ESD) Protection Solutions</td>
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<td>Wireless, Passive Strain Sensor for Space Applications - Graduate Student Researchers Program (GSRP): James Humphries</td>
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<td>Rini Technologies, Inc.</td>
<td>Thermal Management of Aircraft High Performance Electrical Actuation System</td>
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<td>Intel Corporation</td>
<td>RF: Preparation of Boron Carbon Nitride (BCN) films by RF Sputtering using dual target approach</td>
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<td>L3 Communications Link Simulation &amp; Training</td>
<td>RF: Consultation on BCN films and optical measurements</td>
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<td>NASA STTR Phase 1: Wireless SAW Sensor Strain Gage &amp; Integrated Interrogator Design</td>
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<td>UCF/I-4</td>
<td>OFC SAW tag/sensor</td>
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<td>Flexible Phase Shifters - A Stepway to Future Space Vehicle Antenna Systems</td>
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**Florida Space Institute**

| PI: Behal, Dr. Aman | Image-Based Motion Estimation and Tracking for Collaborative Space Assets | $15,000.00 |
| CoPI: Ebadi, Siamak | Flexible Phase Shifters - A Stepway to Future Space Vehicle Antenna Systems | $0.00 |
| PI: Georgiopoulos, Dr. Michael | Flexible Phase Shifters - A Stepway to Future Space Vehicle Antenna Systems | $1,250.00 |

**Office of Research & Commercialization**

| CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $24,000.00 |
| PI: Georgiopoulos, Dr. Michael | Sponsorship of the National Science Olympiad (NSO) at UCF | $7,250.00 |
| CoPI: Richie, Dr. Samuel M | Sponsorship of the National Science Olympiad (NSO) at UCF | $7,250.00 |

**Florida Space Grant Consortium (FSGC)**

| PI: Jones, Dr. W Linwood | Volcanic Eruption Forecasting Algorithm (VEFA) | $25,000.00 |

**College of Science Dean's Office**

| CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $12,000.00 |

**Provost's Office**

| CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $12,000.00 |
| E&G - I-4 | PI: Malocha, Dr. Donald C | I-4: Wireless SAW Strain Gauge and Wireless Integrated Interrogator Design | $10,879.00 |
| College of Sciences | PI: Georgiopoulos, Dr. Michael | Sponsorship of the National Science Olympiad (NSO) at UCF | $5,000.00 |
| College of Sciences | CoPI: Richie, Dr. Samuel M | Sponsorship of the National Science Olympiad (NSO) at UCF | $5,000.00 |
| Office of Undergraduate Studies | PI: Georgiopoulos, Dr. Michael | Sponsorship of the National Science Olympiad (NSO) at UCF | $5,000.00 |
| Office of Undergraduate Studies | CoPI: Richie, Dr. Samuel M | Sponsorship of the National Science Olympiad (NSO) at UCF | $5,000.00 |
| UCF/Office of Research and Commercialization | PI: Lin, Dr. Mingjie | IH: Discriminatively Fortified Computing for Integrated Circuits (IC) Devices | $7,500.00 |
| Medicine Dean's Office | CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $7,002.00 |
| CECS Deans Office | CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $6,000.00 |
| Biology | CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $3,000.00 |
| Florida High Tech Corridor Council | PI: Qu, Dr. Zhizhua | I-4: Unidirectional turbine for wave energy extraction | $2,908.00 |
| Florida Space Grant Consortium (FSGC) | PI: Georgiopoulos, Dr. Michael | Sponsorship of the National Science Olympiad (NSO) at UCF | $1,250.00 |
| Florida Space Grant Consortium (FSGC) | CoPI: Richie, Dr. Samuel M | Sponsorship of the National Science Olympiad (NSO) at UCF | $1,250.00 |
| IST | PI: Georgiopoulos, Dr. Michael | Sponsorship of the National Science Olympiad (NSO) at UCF | $1,250.00 |
| IST | CoPI: Richie, Dr. Samuel M | Sponsorship of the National Science Olympiad (NSO) at UCF | $1,250.00 |
| Physics | CoPI: Georgiopoulos, Dr. Michael | UCF COMPASS: Convincing Outstanding-Math-Potential Admits to Succeed in STEM | $1,680.00 |
| Mathematics | | | |
### Chemistry

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### CREOL

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### College of Engineering and Computer Science (CECS)

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### Advanced Materials Processing & Analysis Center (AMPAC)

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### NanoScience Technology Center

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### Total Internal Award:

| Total Internal Award:           | $387,591.00 |

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### ECE CONTINUING PROJECTS

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<td><strong>Photovoltaic Power Electronics Research</strong></td>
<td>US Dept of Energy</td>
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<td>Behal</td>
<td><strong>Non-Linear Characterization of the Stretch Reflex Arc and its Neuromodulation</strong></td>
<td>NIH</td>
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<td>DeMara</td>
<td><strong>REU Supplement to Collaborative Research: Towards Life-like Computer Interfaces that Learn</strong></td>
<td>NSF</td>
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<td><strong>CRPA: Communicating Avatars: Artificial Intelligence + Computer Graphics = Innovative Science</strong></td>
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<tr>
<td>Author</td>
<td>Project Description</td>
<td>Organization</td>
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| Georgiopoulos | STEM Research/Subsidized Employment for Undergraduates  
STEM Persistence and Female Mentorship Program for Undergraduates  
New and Emerging Research/Subsidized Employment for Undergraduates | Workforce Central Florida |
| Jones    | Inter-Satellite Radiometric Calibration for the GPM Constellation  
Observations of Ocean Surface Wind Speed and Rain Rate with the Hurricane Imaging Radiometer (HIRAD)  
Improved Aquarius Salinity Retrievals using Auxiliary Products from the Microwave Radiometer  
Improved Active/Passive Ocean Vector Wind Retrievals | NASA                        |
| Liou     | Design, Characterization, and Optimization of High Voltage (20 to 70 volts) Electrostatic Discharge (ESD) Protection Elements for Power Management Integrated Circuits  
RF - Development of Standardized Methodology to Correlate System ESD Pulses at Connector to ESD Pulses at IC to Enable IC Design | Intersil Corporation        |
| Malocha  | OFC SAW tag/sensor  
SAW Sensor Parameter Detection Using Coherence Techniques  
NASA SBIR Phase I: Wireless SAW Interrogator and Sensor System  
NASA STTR Phase I: Wireless SAW Sensor Strain Gage & Integrated Interrogator Design  
SAW OFC Device Fabrication on YZ Lithium Niobate  
NASA SBIR Phase I: High Temperature SAW Sensor Development  
Wireless, Passive Strain Sensor for Space Applications - Graduate Student Researchers Program (GSRP): James Humphries  
I-4: Wireless SAW Interrogator and Sensor System | NASA                        |
| Qu       | Wave Energy  
Grid Stability with Distributed Generations and Varying Topologies  
Modeling and Control of Unmanned Aerial Vehicles | L3 Communications Link Simulation & Training |
3.5 Collaborations with Research Centers and Institutes

ECE has active collaborations with centers and institutes on campus. Below is the list of joint ECE appointees and their home unit

50% ECE and 50% NanoCenter

Aman Behal
Associate Professor

Debashis Chanda
Assistant Professor
4. Partnership, Outreach and International Activities

4.1 The Industrial Affiliates Board (IAB)

The 2013 EECS Industrial Advisory Board meeting was held on July 24th, 2012 at Harris Corporation Engineering Center room 101. The meeting was held to collaborate on research areas and enhancing the quality of CpE and EE undergraduate and graduate academic programs.
5. Report of ECE Student Organizations

5.1 ETTA KAPPA NU

The UCF Eta Kappa Nu, Zeta Chi Chapter in the Department of EECS – ECE Division, was approved for reactivation on March 17, 2013. Thirty five members were inducted on November 30, 2012. Of those 35, 20 have since graduated and 15 are active undergraduate students.

The chapter has elected new officers for this academic year and they are currently deciding their future activities.