AY 2016-2017 Annual Report
University of Central Florida
Department of Electrical and Computer Engineering
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Edited by: Jennifer Bhagirath
           ECE, HR Liaison
Message from the Chair

At the departmental level, the top priority has been to hire exceptional faculty members and increase the size of our tenured/tenure-tracking faculty members from middle 20s in AY 2013-2014 to 40 in about five years. This increase enables us to enhance education quality, to reduce the elevated student-to-faculty ratio, and to strengthen our research enterprise. Over the last 4 years, we have made significant progress toward achieving this goal:

- Our tenured/tenure-track headcount has reached 33, including 3 new faculty members (assistant professors) hired in AY 2016-2017;
- The cluster of RISES (Resilient, Intelligent and Sustainable Energy Systems) has hired 5 faculty members, three of whom joined ECE. Led by ECE department, this cluster has established a research portfolio of $10+M federally funding. It will add one additional tenured/tenure-track faculty member and broaden the multidisciplinary reach of ECE research.
- Due to its research successes, ECE department received 2 “strategic hire” positions from the university, and they will be used to strengthen our research in the areas of secure hardware designs and secure cyber physical systems.

Looking forward, we will be recruiting for 5 faculty members in AY 2017-2018 and at least 2 more in AY 2018-2019. ECE department may also benefit from faculty hires by other university clusters. If all go well, we will meet or exceed our target of 40 tenured/tenure-track faculty members.

ECE staff and faculty continue to excel in delivering quality education and undertaking impactful research, as evidenced from the following qualitative measures:

- According to ASEE data, our undergraduate educational programs are among the top-10 most productive in the nation: 170 BSEE & 109 BScpE are awarded this past academic year (a 98% increase in undergraduate degrees conferred since AY2010-2011).
- Our graduate programs continue to be efficient: 20 PhD degrees are conferred (from 19 in AY2010-2011).
- ECE new research funding is $7.8M (from $2.2M in AY2010-2011), and research expenditure is $8.0M (from $2.4M in AY 2010-2011).
- UCF belongs to T50 Index (the top 50 ECE programs) compiled by ECEDHA, the North America ECE department heads association. US News and World Report rankings are 55th (out of 142 ranked programs) for EE and 64th (out of 121 ranked programs) for CpE.

Looking forward, we are very excited about ECE and its future. Our department will continue its growth, ECE faculty (including 1 NAE member, 7 Fellows of IEEE and 7 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.

Zhihua Qu
Professor and Chair of ECE

September 27, 2017
1. Faculty and Staff

1.1 Faculty

**Reza Abdolvand**  
Associate Professor  
Ph.D., Electrical Engineering  
Georgia Institute of Technology, 2008  
Micro- and Nano-Electromechanical System, Micro-resonators for timing and data processing, resonant sensors  
Reza.Abdolvand@ucf.edu

**George Atia**  
Assistant Professor  
Ph.D., Electrical Engineering  
Boston University, 2009  
Signal processing, Stochastic control, Wireless communications, Controlled sensing, Information theory, Detection and estimation  
George.Atfia@ucf.edu

**Issa Batarseh**  
Professor  
Ph.D., Electrical Engineering  
University of Illinois at Chicago, 1990  
Power Electronics, Energy Conversion and Grid-tied Inverters  
batarseh@eecs.ucf.edu

**Aman Behal**  
Associate Professor  
Ph.D., Electrical Engineering  
Clemson University, 2001  
Robotics, Neuronal Modeling, Nonlinear Control and Identification, and Visual Servicing  
abehal@eecs.ucf.edu

**Ronald F. DeMara**  
Professor  
Ph.D., Computer Engineering  
University of Southern California, 1992  
Computer Architecture, Intelligent Systems, Evolvable Hardware  
demara@eecs.ucf.edu

**Aleksandar Dimitrovski**  
Associate Professor  
Ph.D., Power Engineering  
Ss.Cyril & Methodius University, Macedonia, 1997  
Analysis of uncertain power systems; hybrid magnetic-electronic power controllers; power system protection  
A.Dimitrovski@ucf.edu

**Rickard Ewetz**  
Assistant Professor  
Ph.D., Electrical Engineering  
Purdue University, 2016  
Computer Aided design for VLSI; physical design; optimization of large complex system.  
Rickard.Ewetz@ucf.edu

**Yaser P. Fallah**  
Associate Professor  
Ph.D., Electrical & Computer Eng.  
University of British Columbia, 2007  
Modeling of networked systems, wireless networks; autonomous and connected vehicles; intelligent transportation; vehicles safety and energy efficiency; distributed systems  
Yaser.Fallah@ucf.edu
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  
michaelg@eecs.ucf.edu

Xun Gong  
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  
xun.gong@ucf.edu

Yier Jin  
Assistant Professor  
Ph.D., Electrical Engineering  
Yale University, 2012  
Secure, trusted, and reliable processor and ASIC design, Cyber security and cryptography, Proof-carrying code and its implementation in hardware IP core transactions  
Yier.jin@eecs.ucf.edu

Brian Kim  
Assistant Professor  
Ph.D., Electrical Engineering  
Cornell University, 2013  
Bioinstrumentation, CMOS Mixed-signal Circuit Design, Monolithic CMOS Biosensors and Actuators  
Brian.Kim@ucf.edu

Wasfy B. Mikhael  
Professor  
Ph.D., Electrical Engineering  
University of Concordia, 1973  
Digital signal processing, adaptive signal processing, one and multidimensional signal compression  
mikhael@eecs.ucf.edu

Deliang Fan  
Assistant Professor  
Ph.D., Electrical & Computer Eng.  
Purdue University, 2015  
Ultra-low Power Brain-inspired (Neuromorphic), Nano-scale Physics Based Devices, Modeling and Simulations Low Power Digital and Mixed Signal CMOS Circuit Design  
dfan@ucf.edu

Michael Haralambous  
Assistant Professor  
Ph.D., Electrical Engineering  
George Washington University, 1978  
Robust stabilization and control of certain unstable plants  
michaelh@eecs.ucf.edu

W. Linwood Jones  
Professor  
Ph.D., Electrical Engineering  
VA Polytechnic Institute & State University, 1971  
Remote Sensing, Satellite Communications Systems Engineering  
ljones@eecs.ucf.edu

Mingjie Lin  
Associate Professor  
Ph.D., Electrical Engineering  
Stanford University, 2008  
mingjie@eecs.ucf.edu

Nazanin rahnavard  
Associate Professor  
Ph.D., Electrical and Computer Engineering  
Convex optimization, nonlinear system technologies, and their applications in electric power and energy systems, grid integration of renewable energy, battery storage, microgrids, and demand response  
nazanin@eecs.ucf.edu
Kalpathy Sundaram
Graduate Program Coordinator and Professor
Ph.D., Electrical Engineering
Indian Institute of Technology, 1980
Microelectronics, optoelectronic materials, thin films micromachining
sundaram@eecs.ucf.edu

Arthur Weeks
Associate Professor
Ph.D., Electrical Engineering
University of Central Florida, 1987
Biomedical sensors, patient monitoring, tele-healthcare image processing and wireless computing
weeks@eecs.ucf.edu

Parveen F. Wahid
Associate Chair, Undergraduate Program Coordinator and Professor
Ph.D., Electrical Communication Engineering
Indian Institute of Science, Bangalore, India, 1979
Antenna design and analysis, electromagnetics, microwaves
wahid@eecs.ucf.edu

Marwan Simaan
Professor
Ph.D., Electrical Engineering
University of Illinois at Urbana-Champaign, 1972
Optimization and control signal processing, telecommunication and knowledge based signal processing and control
simaan@eecs.ucf.edu

Wei Sun
Assistant Professor
Ph.D., Electrical & Computer Eng.
Iowa State University, 2011
Electric power and energy systems
sun@ucf.edu

Azadeh Vosoughi
Associate Professor
Ph.D., Electrical Engineering
Cornell University, 2006
Cyber-physical systems, Signal and information processing, Detection and estimation theory, Communication theory
azadeh@ucf.edu

Jun Wang
Professor
Ph.D., Computer Science and Eng.
University of Cincinnati, 2002
Computer Architecture, OS and High Performance
juwang@eecs.ucf.edu

Lei Wei
Associate Professor
Ph.D., Electrical Engineering
University of South Australia, 1996
Mobile communications, wireless systems, error control coding, information theory, fast simulation, signal processing
lei@eecs.ucf.edu

Thomas X. Wu
Professor
Ph.D., Electrical Engineering
University of Pennsylvania, 1999
Energy Device and System
tomwu@eecs.ucf.edu

Jiann S. Yuan
Professor
Ph.D., Electrical Engineering
University of Florida, 1988
Semiconductor device modeling, device and circuit simulation, analog digital circuit analysis and design
yuanj@eecs.ucf.edu
NEW FACULTY HIRED DURING AY 2016-2017

**Zakhia Abichar**  
Lecturer  
Ph.D., Computer Engineering  
Iowa State University, 2010  
Wireless networks, mobile computing, pervasive computing, human-computer interaction, innovative computing  
zakhia17@eecs.ucf.edu

**ChungYong Chan**  
Associate 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  
ChungYong.Chan@ucf.edu

**Qun Zhou**  
Assistant Professor  
Ph.D., Electrical Engineering  
Iowa State University, 2011  
Data Analytics in power systems; smart grid; renewable energy integration; power economics.  
Qun.Zhou@ucf.edu

**Murat Yuksel**  
Associate Professor  
Ph.D., Computer Science  
Rensselaer Polytechnic Institute, 2002  
Networked and wireless systems; optical wireless; spectrum sharing, network economics and architectures; big-data and cloud networking  
Murat.Yuksel@ucf.edu

**Amro Awad**  
Assistant Professor  
Ph.D., Computer Engineering  
North Carolina State University, 2016  
Computer architecture, emerging memory technologies, and hardware security.  
Amro.Awad@ucf.edu

**Qifeng Li**  
Assistant Professor  
Ph.D., Electrical Engineering  
Arizona State University, 2016  
Convex optimization, nonlinear system technologies, and their applications in electric power and energy systems, grid integration of renewable energy, battery storage, microgrids, and demand response  
Qifeng.Li@ucf.edu

**Robert Reedy**  
Visiting Associate Professor  
M.S., Electrical Engineering  
Auburn University, 1975  
Power Systems Analysis  
Reedy@fsec.ucf.edu

**Junjian Qi**  
Assistant Professor  
Ph.D., Electrical Engineering  
Tsinghua University, 2013  
Cascading blackouts, power system dynamics and stability, state estimation, synchrophasors, voltage control, demand responses, and cybersecurity  
Junjian.Qi@ucf.edu

TEACHING & RESEARCH FACULTY

**Zakhia Abichar**  
Lecturer  
Ph.D., Computer Engineering  
Iowa State University, 2010  
Wireless networks, mobile computing, pervasive computing, human-computer interaction, innovative computing  
zakhia17@eecs.ucf.edu

**ChungYong Chan**  
Associate 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  
ChungYong.Chan@ucf.edu
**PROFESSOR EMERITUS**

**Donald Malocha**
Professor Emeritus  
Ph.D., Electrical Engineering  
University of Illinois, 1977

Solid state semiconductor and acoustic devices, RF, communications, and materials  
Donald.Malocha@ucf.edu

**Ronald Philips**
Professor Emeritus  
Ph.D., Engineering  
Arizona State University, 1971

Propagation through random media, optical communications, laser radar and imaging through atmospheric turbulence.  
Ronald.Philips@ucf.edu

**Samuel Richie**
Associate Professor Emeritus  
Ph.D., Electrical Engineering  
University of Central Florida, 1989

Surface Acoustic Wave Device Modeling and Application, Communications and Embedded Systems  
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**Nicolaos S. Tzannes**
Professor Emeritus  
Ph.D., Electrical Engineering  
Johns Hopkins University, 1966

Communications, signal/image processing  
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---

**Nicolaos S. Tzannes**
Professor Emeritus  
Ph.D., Electrical Engineering  
Cairo University, 1984

Electromagnetic analysis of electric machines, Finite-element methods in the analysis and design of electric machines  
azza@eecs.ucf.edu

**Ronald Philips**
Professor Emeritus  
Ph.D., Engineering  
Arizona State University, 1971

Propagation through random media, optical communications, laser radar and imaging through atmospheric turbulence.  
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**Samuel Richie**
Associate Professor Emeritus  
Ph.D., Electrical Engineering  
University of Central Florida, 1989

Surface Acoustic Wave Device Modeling and Application, Communications and Embedded Systems  
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Professor Emeritus  
Ph.D., Electrical Engineering  
Johns Hopkins University, 1966

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Ming Su
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NanoScience
Encapsulated phase change nanoparticles for biological sensing applications
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Mubarak Shah
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Computer vision, gesture recognition, lipreading shape from shading, visual surveillance, visual motion, motion based recognition, optical flow
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Laser-Induced-Breakdown Spectroscopy (LIBS)
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Nonlinear Optics, Laser Induced Damage
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Randall Shumaker
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Damla Turgut
Associate Professor
Computer Science
Wireless ad hoc, sensor and vehicular networks, value of information and privacy in Internet of Things (IoT), big data in STEM education
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Professor of Optics, CREOL
Nonlinear Optics, Laser Induced Damage
mj@creol.ucf.edu

Randall Shumaker
Director
Institute for Simulation & Training
shumaker@ist.ucf.edu

Cliff Zhou
Associate Professor
Computer Science
Computer and network security, network modeling and performance evaluation
czou@cs.ucf.edu
External Awards and Honors

Florida Inventors Hall of Fame
Issa Batarseh

New York University CSAW Embedded Systems Challenge
CpE Student Team supervised by Yier Jin

SIGDA Outstanding New Faculty Award
Yier Jin

NASA PPM Science Team Award
Linwood Jones

Fellows of Technical & Honor Societies

US Fullbright Scholar
Aleksandar Dimitrovski

Office of Naval Research
George Atia

Chair, Professorship, Endowed Professorship, University Professorship and Faculty Fellows

George Atia, Dean’s Advisory Board Faculty Fellow Award, CECS

Aman Behal, Charles N. Millican Faculty Fellow, CECS

Services of Professional Societies

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Professional Services</th>
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</table>
Issa Batarseh
• NASA Member of the Power Technical Committee, NASA wide Committee

Aman Behal
• Associate Editor, IEEE International Conference on Control & Automation, Kathmandu, Nepal, June 2016
• Associate Editor, IEEE Transactions on Control Systems Technology
• Associate Editor, IEEE Transactions on Cybernetics
• Associate Editor, ASCE Journal of Aerospace Engineering
• Associate Editor, International Journal of Aeronautical and Space Science
• Associate Editor, Conference Editorial Board, IEEE Control Systems Society

Yaser Fallah
• Steering Committee Member, IEEE Connected Vehicle Initiative, Vehicular Technology Society
• Associate Editor: IEEE Transactions on Vehicular Technology, Spring 2016-present

Deliang Fan
• Program Committee member of SIGDA PhD Forum at Design Automation Conference 2017)
• Technical program committee member of VLSI Circuits and Low Power track for Great Lakes Symposium on VLSI (GLSVLSI) 2017
• Technical program committee member of IEEE Computer Society Annual Symposium on VLSI (ISVLSI) 2017

Xun Gong
• General Chair: IEEE WAMICON, Co-Chair
• Executive Committee: IEEE WAMICON
• Executive Committee: Chair of WAMICON Executive Committee
• Executive Committee: Technical Program Committee Member
• Executive Committee: IEEE AP-S/URSI International Symposium
• Executive Committee: IEEE MTT-S IMS
• Executive Committee: IEEE RWS
• Executive Committee: IEEE SiRF
• Executive Committee: IEEE WiSNet
• Executive Committee: IEEE WAMICON
• Executive Committee: IEEE EuMW

Wasfy Mikhael
• IEEE MWSCAS steering membership chair.
Zihua Qu
• Board of Directors, Electrical Engineering Department Heads Association (ECEDHA)
• Board of Directors, Southeastern Center for Electrical Engineering Education (SCEEE)
• Chair, IEEE CSS Smart Grid Technical Committee
• Associate Editor, IEEE ACCESS
• Associate Editor, Automatica

Nazanin Rahnavard

Marwan Simaan
• AAAS Engineering Section Member of Steering Group
• AAAS Engineering Section Secretary
• AAAS Member of Fellow Committee
• IEEE Access Editorial Board
• IEEE Systems Journal, Member of Editorial Advisory Board
• Integrated Computer-Aided Engineering, Member Editorial Advisory Board

Wei Sun
• IEEE PES Power System Analysis, Computing and Economics (PSACE) Committee, Task Lead of Restoration from Cascading Failures in Working Group of Understanding, Prediction, Mitigation and Restoration of Cascading Failures
• ASEE National Defense Science & Engineering Graduate Fellowship (NDSEG) Review Panel

Kalpathy Sundaram
• Electrochemical Society 2015 Summer Fellowship Committee
• Member of Education Committee, Electrochemical Society

Azadeh Vosoughi
• TPC member of IEEE International Conference on Communications (ICC),
• TPC member of Military Communications Conferences (MILCOM),
• TPC member of IEEE Global Communications Conference (GLOBECOM).
• Associate Editor for the IEEE Transactions on Wireless Communications (April 2012-August 2015),
• Associate Editor for the IEEE Signal Processing Letters (January 2012-
January 2016),


Parveen Wahid
- Elected member IEEE APS ADCOM 2016-2019
- Chair, IEEE AP-S Globalization of EM Education Initiative
- Member, IEEE AP-S Awards Committee in charge of
- Chair, WIE Committee, IEEE Orlando Section
- Member IEEE AP and MTT societies
- Member URSI Commissions B and K
- Associate Editor, Computer Applications in Engineering Education
- Associate Editor, International Journal on Antennas and Propagation

Jun Wang
- General Executive Chair for 2017 federated conferences of IEEE CyberSciTech, DataCom, PICom and DASC.
- Local arrangement chair for the IEEE IPDPS'17.

Jiann-Shiun Yuan
- IEEE Electron Devices Society, Distinguished Lecturer
- Editor, IEEE Transactions on Device and Materials Reliability

Murat Yuksel
- Editorial Board Member, Computer Networks, 2014-Present
- Editor-in-Chief for Special Issues, EAI Endorsed Transactions on Future Internet, 2016
- Steering Committee Member, IEEE LANMAN Symposium, 2015-Present
- Steering Committee Member, IEEE ICC Workshop on Resiliency in Public Safety
- Workshop Co-chair, ACM CoNEXT Workshop on Cloud-Assisted Networking (CAN)
- Technical Program Committee Member, IEEE INFOCOM
- Technical Program Committee Member, IFIP/IEEE NETWORKING
- Technical Program Committee Member, IEEE ICCCN
- Technical Program Committee Member, IEEE GLOBECOM
• Technical Program Committee Member, IEEE ICC
• Technical Program Committee Member, IEEE VTC
• Technical Program Committee Member, IEEE LANMAN
• Technical Program Committee Member, ACM MOBICOM VLCS
• Technical Program Committee Member, ACM ICDCN
• Vice President of Board of Trustees, Coral Academy of Science Charter School
• Member of Board of Trustees, Coral Academy of Science Charter School

Qun Zhou
• IEEE Power and Energy Society, active journal and conference referee

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University Honors and Awards

Issa Batarseh UCF TIP Award 2016

Chung Young Chan UCF TIP Award 2017

Ronald DeMara UCF TIP Award 2017
Excellence in Undergraduate Teaching Award: February, 2017
Scholarship of Teaching and Learning (SoTL) Award: April, 2017

Mingjie Lin
2017 Reach for the Stars Award, UCF
2017 DAB Fellowship Award, School of CECS, UCF.

Jun Wang UCF Research Incentive Award, February 2017

1.2 STAFF

ECE ADMINISTRATIVE AND TECHNICAL STAFF

Jennifer Bhagirath
HR Liaison
jennifer.bhagirath@ucf.edu
Office: HEC-439A
Office Phone: (407) 823-5942

Diana Camerino
Graduate Admissions Specialist
diana@eecs.ucf.edu
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Office Phone: (407) 823-3027

Theresa Collins
Coordinator
Accounting Services
theresa@eecs.ucf.edu
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Office Phone: (407) 823-2637

David Douglas
Laboratory Manager
douglas@eecs.ucf.edu
Office: ENGR-465
Office Phone: (407) 823-5797
2. Academic Programs

2.1 Enrollment and Degrees Awarded

**Undergraduate: BSEE & BSCpE**

The mission of the Department of Electrical and Computer Engineering (ECE) 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 undergraduate programs for Fall 2016 totaled 1541 students as listed below:

- BSEE Enrollment = 778
- BSCpE Enrollment = 763

The chart below shows undergraduate enrollment trend in EE and CpE from Fall 2010 to Fall 2016.
The ECE department awarded 280 Undergraduate degrees for AY 2016-2017, as listed below:

- BSEE: Degrees Awarded = 171
- BSCpE: Degrees Awarded = 109

Total Undergraduate Degrees awarded in ECE = 280

The chart below shows the degrees awarded for EE and CpE from AY 2009-2010 to AY 2016-2017.

(Source: UCF Pegasus Mine Portal)

**GRADUATE: MSEE, MSCpE, PH.D. EE, PH.D. CpE**

Fall 2016 Enrollment in ECE graduate programs totaled 327 students as listed below:

- MSEE Enrollment = 83
- MSCpE Enrollment = 64
- Ph.D. EE Enrollment = 126
- Ph.D. CpE Enrollment = 54
The chart below shows graduate enrollment in EE and CpE starting Fall 2010 to Fall 2016.

![ECE Graduate Enrollment Chart](image)

(Source: UCF Pegasus Mine Portal)

The ECE department awarded 77 MS degrees and 20 Ph.D. degrees in AY 2016-2017 as listed below:

Total Masters Degrees awarded in ECE = 77
- M.S.EE: Degrees Awarded = 42
- M.S.CpE: Degrees Awarded = 35

The chart below shows M.S. degrees conferred from AY 2010-2011 to 2016-2017.

![ECE M.S. Degrees Awarded Chart](image)

(Source: UCF Pegasus Mine Portal)

Total Doctoral degrees awarded in ECE = 20
- Ph.D.EE Degrees Awarded = 15
- Ph.D.CpE: Degrees Awarded = 5

The chart below shows Ph.D. degrees conferred from 2010-2011 to 2016-2017.
2.2 Ph.D. DISSERTATIONS & MS THESIS & HONORS THESIS

Ph.D. Dissertations during AY 2016-2017:

<table>
<thead>
<tr>
<th>Term</th>
<th>Last Name</th>
<th>First Name</th>
<th>Title</th>
<th>Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2016</td>
<td>Paris</td>
<td>Alan</td>
<td>Biophysical Sources of 1/f-Type Noises in Neurological Systems</td>
<td>Atia</td>
</tr>
<tr>
<td>Spring 2017</td>
<td>Aldhahab</td>
<td>Ahmed</td>
<td>High Performance Techniques for Facial Recognition</td>
<td>Atia</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>Sanders</td>
<td>Tracy</td>
<td>Individual Differences in Trust Towards Robotic Assistants –</td>
<td>Behal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Department of Psychology</td>
<td></td>
</tr>
<tr>
<td>Summer 2016</td>
<td>Snyder</td>
<td>Mark</td>
<td>Quad-Segment-Polynomial-Trajectory Guidance Law for Improved</td>
<td>Behal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Time-To-Go and Impact Time Control</td>
<td></td>
</tr>
<tr>
<td>Summer 2016</td>
<td>Valizadeh Haghi</td>
<td>Hamed</td>
<td>Stochastic Distributed Optimization Of</td>
<td>Behal</td>
</tr>
</tbody>
</table>

(Source: UCF Pegasus Mine Portal)
<table>
<thead>
<tr>
<th>Season</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Title</th>
<th>Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2016</td>
<td>Bai</td>
<td>Yu</td>
<td>Spatio-Temporal Operations In Smart Grid</td>
<td>DeMara</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>Sarvestani</td>
<td>Amin Tahmasbi</td>
<td>Situational Awareness Enhancement for Connected and Automated Vehicle Systems</td>
<td>Yaser</td>
</tr>
<tr>
<td>Spring 2016</td>
<td>He</td>
<td>Zhezhi</td>
<td>Research in Low Power On-Chip Learning of Artificial Neural Network</td>
<td>Fan</td>
</tr>
<tr>
<td>Spring 2017</td>
<td>Li</td>
<td>Tianjio</td>
<td>Enhancement of Antenna Array Performance using Reconfigurable Slot-ring Antennas and Integrated Filter/Antennas</td>
<td>Gong</td>
</tr>
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**MS Thesis during AY 2016-2017:**

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### 2.4 STUDENT AWARDS RECEIVED

- **Alvin Lehman Scholarship**
  - Stephen Pilcher

- **AT&T Wireless Scholarship**
  - Matthew Aberman
  - Minecksson Denis
  - Deandra Dixon
  - Brandon James
  - Fatemah Yazdiananari

- **Professor James Beck Scholarship**
  - Ley Nezifort
  - Nha Nguyen

- **Boeing Scholarship**
  - Akash Jinandra
  - William Santos
  - Robert Short

- **Daniel D. Hammond Engineering Scholarship (Undergraduate)**
  - Matthew Aberman
  - Deandra Dixon
  - Francis Jourdain
  - Eric Baysinger
Carla Majluf
Kevin Leone
Ley Nezifort
Nha Nguyen

Daniel D. Hammond Engineering Scholarship
(Graduate)
Yu Bi
Andrea Santos Garcia
Nicholas Paperno
Gonzalo Vaca Castano

David and Jane Donaldson Memorial Scholarship
Navid Khoshavi Najafabadi

Duke Energy
Wesley Mullins

Frank Hubbard Engineering Endowed Scholarship
Yunfeng Xi
David Clapp
Minecksonn Denis

Kenneth Kiefer Scholarship
Robert Short

Northrup Grumman Scholarship
Aiman Salih
Lucas Plager

Kris & Bill Sammons Engineering Scholarship
Tasneem Ibrahim

Walt Disney World Scholarship
Shayna Brock
John Geiger
Patrick Schexnayder
Hieu Pham

William Horton Scholarship
Fatemah Yazdiananari

FGLSAMP
Desiree Dominguez

NACME
Ramon Jimenez
Luis Hurtado
Daniel Bentacourt
Maria Nunez Ortiz
Pier Belizaire
Victor Bassey
Ley Nezifort
Ahkeim Pierre
Darrell Thompson

Texas Instruments
Samuel Bigio
Marcus Darby
2.5 Course & Program Development

Some course and program details for AY 2016 – 2017

- Revised the existing EE and CpE curriculum. Introduced Track Options in the EE and CpE to allow students a broader choice of technical electives to prepare them better to meet the demands of the job market. Approved for implementation in the 2017 catalog.
- Four Track Options in EE: Comprehensive Track, Power and Renewable Energy Track, RF and Microwaves Track, Communications and Signal Processing Track.
- Two track options in CpE: Comprehensive Track and Digital VLSI Circuits Track
- Grade of C (2.00) or better in EEE 3342C Digital Systems, EEL 3004C Electrical Networks, EEL 3123C Networks and Systems, EEL 3801C Computer Organization, and EGN 3211 Engineering Analysis and Computation courses.
- Support university wide STEM Day through participation.
- Host a Professional Development and Career Planning event for ECE students, coordinating with the UCF Experiential Learning office, IEEE and HKN
- BOG TEAm courses offered by UCF, USF and FIU

2.6 Instructional Laboratories

Undergraduate/Graduate ECE Teaching Laboratories

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Laboratory & Support

- Continuous updating of teaching labs is funded by an Equipment Fee:
  - Undergraduate CpE: Full-time $84, Part-time $42
  - Graduate CpE: Full-Time $28, Part-time $14
  - Undergraduate & Graduate EE: Full-time $90, Part-time $45

*(Fee’s listed are per student per semester.)*

2.7 Lectures and Seminars

<table>
<thead>
<tr>
<th>Guest Speaker</th>
<th>From</th>
<th>Title of Talk</th>
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<tbody>
<tr>
<td>Kwang-Cheng Chen.</td>
<td>National Taiwan University</td>
<td>Networking, Computing, and Security of Cyber-Physical Systems</td>
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<tr>
<td>Dr. Raed Shubair</td>
<td>Khalifa University, UAE</td>
<td>Terahertz Nano-Communications: Recent Advances and Future Directions</td>
</tr>
<tr>
<td>Dr. Raymond C. Rumpf</td>
<td>IEEE MTT/AP Orlando Chapter</td>
<td>Spatially-Variant Periodic Structures in Electromagnetics</td>
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<tr>
<td>Dr. Harvey Borovetz</td>
<td>University of Pittsburgh</td>
<td>MAE-ECE Joint Distinguished Seminar</td>
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<tr>
<td>Dr. Frank Schwierz</td>
<td>Technische Universitat, Ilmenau, Germany</td>
<td>Two-Dimensional Materials (Graphene and Beyond) for Electronics - Opportunities and Challenges</td>
</tr>
<tr>
<td>Michail Maniatakos</td>
<td>New York University</td>
<td>Cryptoleq: A Heterogeneous Abstract Machine for Encrypted and Unencrypted Computation</td>
</tr>
<tr>
<td>Xiaobo Zhou</td>
<td>University of Colorado</td>
<td>Improving Performance, Elasticity, and Sustainability in BigData Cloud Computing</td>
</tr>
<tr>
<td>Gokhan Mumch</td>
<td>University of South Florida</td>
<td>Microfluidically Loaded Highly Reconfigurable</td>
</tr>
<tr>
<td>Name</td>
<td>Institution/Location</td>
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<tr>
<td>Dr. Takeshi Hatanaka</td>
<td>Tokyo Institute of Technology</td>
<td>Compact Antennas and RF Devices</td>
</tr>
<tr>
<td>Andrea Alu</td>
<td>The University of Texas</td>
<td>A Passivity-Based Perspective for Distributed Optimization</td>
</tr>
<tr>
<td>Yi Pan</td>
<td>Georgia State University</td>
<td>From Cloaking to One-Way Propagation: the Fascinating Physics and Engineering of Metamaterials</td>
</tr>
<tr>
<td>Jeremy Lin</td>
<td>PJM Interconnection</td>
<td>Agent-Based Secure Distributed Control Strategy for DESS under Cyber Attack Scenarios</td>
</tr>
<tr>
<td>Liang Du</td>
<td>Schlumberger Technology Corporation</td>
<td>Ubiquitous Load Modeling and Autonomous Decision Making for Networked Nanogrids</td>
</tr>
<tr>
<td>Qifeng Li</td>
<td>Massachusetts Institute of Technology</td>
<td>Deep Learning for Big Data and Bioinformatics Applications</td>
</tr>
<tr>
<td>Yang (Cindy) Yi</td>
<td>University of Kansas</td>
<td>Convex Nonlinear Models of Electric Power Systems</td>
</tr>
<tr>
<td>Yue Cao</td>
<td>University of Illinois at Urbana-Champaign</td>
<td>Brain-Inspired Computing: Grand Challenges, Hardware Designs, and Emerging Applications</td>
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<tr>
<td>Zhisheng Yan</td>
<td>State University of New York</td>
<td>Power Electronics Enabled Next Generation Systems of Systems</td>
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<tr>
<td>Haryadi Gunawi</td>
<td>The University of Chicago</td>
<td>Sustained Mobile Visual Computing: A Human-Centered Perspective</td>
</tr>
<tr>
<td>Yang Hu</td>
<td>University of Florida</td>
<td>Why New Bugs Live in the Cloud? (And How to Exterminate Them)</td>
</tr>
<tr>
<td>Hui Lin</td>
<td>University of Illinois at Urbana-Champaign</td>
<td>Towards Efficient Architecture Design in IoT Big Data Era: Integrating Intelligence into the Communication Path</td>
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<tr>
<td>David Sheridan</td>
<td>Alpha and Omega Semiconductors, Inc.</td>
<td>Detection and Prevention of Intrusions in Power Systems' Cyber-Physical Infrastructure</td>
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<tr>
<td>Lingjia Liu</td>
<td>University of Kansas</td>
<td>High-Voltage SiC and GaN: Devices, Techniques, and Applications</td>
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<tr>
<td>Junjian Qi</td>
<td>Argonne National Laboratory</td>
<td>Enabling Technologies for 5G Communications: From Theory to Practice</td>
</tr>
<tr>
<td>Fareena Saqib</td>
<td>Florida Institute of Technology</td>
<td>Enhancing Power System Resilience and Cyber-Physical Security</td>
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<tr>
<td>Naoki Shinohara</td>
<td>Kyoto University, Japan</td>
<td>Hardware based Authentication and Trust for IOTs</td>
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<tr>
<td>Amro J. Awad</td>
<td>Sandia National Laboratories</td>
<td>Current Research and Development of Wireless Power Transfer via Radio Waves and the Application</td>
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<tr>
<td>Thomas Cwik</td>
<td>NASA Jet Propulsion Laboratory, California Institute of Technology</td>
<td>Towards Efficient Integration of Emerging Non-Volatile Memory Technologies in Future Systems</td>
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<tr>
<td>Daniel L. Schweickart</td>
<td>Air Force Research Laboratory</td>
<td>Deployable Reflectarray Antennas for Space Applications</td>
</tr>
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<td>Arc Fault Testing To Support Standards Development For Robust DC Electrical Power Systems</td>
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</tbody>
</table>
3. Research

3.1 AREAS OF RESEARCH

Computer Systems and Architecture (CSA)
- 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 (CPS) [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 and Optics (EO)
- Remote Sensing, Satellite Communications
- Microwave Sensors, Antennas, Phased Arrays and Integrated RF

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

3.2 RESEARCH LABORATORIES
**Advanced Microfabrication Support Laboratory – ENG I 122**
Kalpathy Sundaram and Reza Abdolvand

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.

**Antenna, RF and Microwave Integrated Systems Laboratory – HEC 428 & HEC 431**
Xun Gong, Parveen Wahid, Raj Mittra

At ARMI Laboratory, we are performing research in antennas and microwave engineering. Our research interests include reconfigurable antenna arrays, phased arrays, and beam steerable 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 331**
Michael Georgiopoulos and 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 sectional 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 with disabilities interacting with 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.

Communication and Wireless Networks – HEC 331
Nazanin Rahnavard

At Communications and Wireless Networks our passion is to significantly advance the telecommunication and networking systems by introducing new frameworks, schemes, and innovative applications. Our research effort bridges several areas such as telecommunications, modern wireless networking, and signal processing. Our research interests include compressive sensing, cognitive radio networks, wireless sensor networks, and modern error-control coding.

Computer-Aided Design (CAD) Laboratory – ENG1 471
Rickard Ewetz

In the computer-aided design (CAD) laboratory, we perform research on the design and synthesis of VLSI circuits using CMOS and post-CMOS devices. The focus is on developing techniques within the domains of optimization, automation, and computation, to improve performance metrics as cost, power, reliability, resilience, and robustness. Applications include low power circuits, high performance circuits, and reconfigurable circuits used in devices deployed in the Internet of things.
Computer Systems & Architecture Laboratory - HEC 242
Ronald DeMara, Jun Wang, Mingjie Lin, Yier Jin, and Deliang Fan

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 and George Atia

The research conducted covers a wide range of topics in digital signal processing, sensing, and machine learning. Topics include: (i) adaptive signal processing with applications in communications, including adaptive beamforming, channel identification, noise cancellation, and IQ mismatch compensation; (ii) speech and image processing with applications in signal compression, efficient model and transform-based signal representation, facial recognition, speaker recognition, and human action recognition; (iii) sparsity-based signal processing with applications such as compressive sensing, network tomography, group testing, (iv) scalable and robust data processing with applications in machine learning and computer vision, including activity detection, data sketching, video summarization, motion segmentation, and tracking; (v) processing and modeling of brain signals for real-time brain-computer interfaces, (vi) adaptive algorithms for real and complex signals and systems with applications such as error correction in interleaved analog-to-digital converters, interference suppression, signal Separation, signal enhancement; (vii) optical signal processing with applications in interferometry and computational imaging; (viii) controlled data acquisition and sensing for efficient policy design and reliable decision-making in emerging large-scale cyber-physical systems for civil infrastructure, healthcare, energy, manufacturing, and transportation.

Evolutionary Computation Lab – HEC 303
Michael Georgiopoulos and Annie Wu

The Evolutionary Computation Lab at the University of Central Florida conducts research in the areas of Evolutionary Computation and Natural Computation. Evolutionary algorithms, including genetic algorithms, evolutionary programming, and evolutionary strategies, are search and learning tools which are based on principles from genetics and evolutionary biology and have been successfully applied to a wide range of problems. Natural computation focuses on computational
mechanisms based on natural phenomena as well as complex adaptive systems that involve multiple interacting entities. The research in our lab includes both theoretical studies on how these algorithms work and real world applications.

**Florida Power Electronics Center – UCF Incubator**  
**Issa Batarseh, Director**  
**3259 Progress Dr., Suite 111**  
**Orlando, FL 32816**  
**Email: issa.batarseh@ucf.edu**

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.

For More information, please visit [fpec.ucf.edu](http://fpec.ucf.edu)

**Micro/Nanoelectronics Design Laboratory – HEC 401**  
**Kalpathy Sundaram**

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 and Vikram Kapoor**

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.
Microsystems Laboratory – HEC 404
Reza Abdolvand

In Microsystems Lab we utilize our collective intellectual capacities to extend the application of hybrid integrated micro-systems to new areas of technology. Our main focus is to understand the fundamental physics behind the operation of transducers at small scales and to optimize their performance for applications in the fields of radio-frequency, biomedical, and wireless sensing.

Networking and Wireless Systems Laboratory (NWSL) – ENG1 471
Murat Yuksel

The research efforts in our laboratory touch various topics in computer communication networks encompassing both experimental and theoretical aspects. NWSL gives particular focus on concepts that keep data networks up and running with high efficiency as well as design and development of wireless systems capable of standing in the new modern mobile world. Some of the research topics that we study include free-space-optical (optical wireless) communication and networks, visible light communication, device-to-device (D2D) systems, spectrum sharing, public safety communications, network economics and architectures, cloud-assisted networking, network management, meta-networking, and network protocols. Most of our collaborations are interdisciplinary spanning significantly different disciplines such as behavioral science, math, economics, and physics. Please visit the lab website for more information: http://server.cs.ucf.edu/nwsl

Power Systems Laboratory – HEC 302
Wei Sun

In the Power Systems Lab, we are working on different aspects of power systems including:
a) Optimal operation of transmission and distribution systems with high penetration of renewable energies
b) Stochastic modeling of power systems
c) Protection of PV farms
d) Real-time monitoring of transmission and distribution systems
e) Power system restoration and resilience analysis

Secure CMOS Design Laboratory – HEC 425
Jiann S.Yuan, Yier Jin, Ronald DeMara, and Deliang Fan

The Secure CMOS Design 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.

Robotics Laboratory – ENG 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.

**Siemens Digital Grid Laboratory – HEC 302**

**Wei Sun and Zhihua Qu**

In the Siemens Digital Grid Lab, we are working on different aspects of power systems and smart grid including:

a) Operation and control of transmission and distribution systems with high penetration of renewable energies  
b) Microgrid modeling and control  
c) Wide area monitoring, control, and protection  
d) Power system restoration and resilience analysis  
e) Distribution system automation

**Signals and Communication Laboratory – HEC 334**

**Lei Wei and Azadeh Vosoughi**

At Signals and Communication Lab, we conduct research in the broad areas of communication theory, information theory, wireless communications, and signal processing. The research topics include: emergency communications, error control coding, application of advanced coding theory in bio-inspired system design, called General Purpose Representation and Association Machine (GPRAM), distributed signal processing for wireless communications, distributed detection and estimation theory for wireless networks, sensing and data fusion, and cooperative communications.

**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 – ENG I 234**

**Arthur Weeks**

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, and 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

**Book Chapters**


Journal Publications


17. R. F. DeMara+, M. Platzner, and M. Ottavi, “Guest Editorial: IEEE Transactions on Computers and IEEE Transactions on Emerging Topics in Computing Joint Special Section on Innovation in Reconfigurable Computing Fabrics from Devices to Architectures,” IEEE Transactions on Emerging Topics in Computing, Vol. 4, No. 3, pp. 1 – 2, April – June 2017. DOI: 10.1109/TETC.2016.2641599 (IF=not available due to being a new journal) (in 2016 calendar year, the manuscript acceptance rate was 21.5 percent)


30. A. Melhorn, K. McKenna, A. Keane, D. Flynn, A. Dimitrovski, “Autonomous plug and play electric vehicle charging scenarios including reactive power provision: a probabilistic load flow


85. Navid Khoshavi, Xunchao Chen*, Jun Wang, and Ronald F. DeMara. Read-Tuned STT-RAM and eDRAM Cache Hierarchies for Throughput and Energy Enhancement. Accepted by IEEE TRANSACTIONS ON MULTI-SCALE COMPUTING SYSTEMS.

1.72).


91. *Huihui Li and Lei Wei, “Optimizing MPSK, MDPSK and Dual-ring QAM Signaling with Non-equal Symbol Probabilities” to be submitted.


Conference Papers with Proceedings


65. Mohammed Alawad* and **Mingjie Lin**+. Stochastic-Based Multi-Stage Streaming Realization of Deep Convolutional-Neural Network. the 18th International Symposium on Quality Electronic Design (ISQED2017).


81. Towfiq Rahman, Roland Harvey, **Zhihua Qu***, Marwan A. Simaan, "A Distributed Cooperative Load Control Approach for Ancillary Services in Smart Grid", the 2017 American Control Conference, Sheraton Seattle Hotel, May 24-26, Seattle, WA, USA.


89. Farzad Aalipour, Azwirman Gusrialdi, and **Zhihua Qu**, "Distributed Optimal Output Feedback Control of Heterogeneous Multi-agent Systems under a Directed Graph," The 20th World Congress of the International Federation of Automatic Control, Toulouse, France, July 9-14, 2017.


100. Victor Velez and K. B. Sundaram, “Morphology in porous silicon prepared from Si-nanowires grown by electroless etching”, 230th Meeting of the Electrochemical Society, Honolulu, Hawaii, October 2-7, 2016 (International)


120. Q. Alasa*, J. S. Yuan, and D. Fan; J. S. Yuan+, "Leveraging all-spin logic to improve hardware security," ACM Great Lake Symposium on VLSI, Lake Louise, Canada, May 10-12, 2017


30, Irvine, CA, November 2016.


Conference Papers without Proceedings


Plenary and Invited Talks


5. Batarseh, I. “Recent Advances in Distributed Smart Solar Energy”, Tel Aviv University, Israel, Feb 5, 2017.


16. Jin, Y. EDA Workshop, Hong Kong, China August 2016. Title: “Arm-Race on Logic Obfuscation and IC Camouflaging for IP Protection” (Host: Zili Shao)


18. Jin, Y. Syracuse University, Syracuse, NY July 2016. Title: “Security Vulnerability Database for IoT” (Host: Yanzhi Wang)

19. Jin, Y. International Workshop on Hardware Security, Beijing, China June 2016. Title: “Hardware’s Active Role in Cybersecurity” (Host: Xiaoxiao Wang)


Patents

Abdolvand, R. Hakhamanesh Mansoorzare, “Resonant-Based Passive Wireless Accelerometer.”


### 3.4 RESEARCH EXPENDITURES AND FUNDING

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<th>Academic Year</th>
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<tr>
<td>Abolvand, Dr. Reza</td>
<td>RET Site: Collaborative Multidisciplinary Engineering Design Experiences for Teachers (CoMET)</td>
<td>National Science Foundation (NSF)</td>
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<tr>
<td>Atia, Dr. George K.</td>
<td>I/UCRC Multi-functional Integrated System Technology (MIST) Development of Diffraction-Free Space-Time Optical Beams</td>
<td>National Science Foundation (NSF)</td>
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<td>Behal, Dr. Aman</td>
<td>CHS: Medium: Collaborative Research: Social Learning in Mixed Human-Robot Groups for People with Disabilities Development of an Intelligent Assistive Robotic System for Individuals with Multiple Sclerosis</td>
<td>US Department of Health &amp; Human Services</td>
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<td>CHS: Medium: Collaborative Research: Social Learning in Mixed Human-Robot Groups for People with Disabilities</td>
<td>National Science Foundation (NSF)</td>
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<td></td>
<td>CHS: SMALL: EMPOWERMENT OF DISABLED INDIVIDUALS VIA AN ADAPTIVE FRAMEWORK FOR INDIRECT HUMAN ROBOT INTERACTION</td>
<td>National Science Foundation (NSF)</td>
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<tr>
<td>Fan, Dr. Deliang</td>
<td>Ultra-Low Energy Brain-Inspired Computing using Nanoscale Emerging Spintronic Devices</td>
<td>Southeastern Center for Electrical Engineering Education</td>
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<tr>
<td>Georgioupolos, Dr. Michael</td>
<td>Collaborative Research: Florida-IT-Pathways to Success (Fit-Path) Central Florida - STEM Training Consortium (CF-STEM) Internship Funding - DATANAUTIX, INC. Central Florida - STEM Training Consortium (CF-STEM) Internship Funding - Orlando Utilities Commission (OUC) Central Florida - STEM Training Consortium (CF-STEM) Internship Funding - BBA Aviation, Inc. Central Florida - STEM Training Consortium (CF-STEM) - SightPlan Central Florida - STEM Training Consortium (CF-STEM) Internship Funding - Stratex Partners Central Florida - STEM Training Consortium (CF-STEM) Internship Funding - Design Launchers LLC</td>
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<td>Central Florida - STEM Training Consortium (CF-STEM) - Sonobi, Inc.</td>
<td>National Science Foundation (NSF)</td>
</tr>
<tr>
<td>Gong, Dr. Xun</td>
<td>I-Corps: High-Temperature Sensors for Turbine Industry Bridging the Hardware-Software Gap: A Proof-Carrying Approach for Computer Systems Trust Evaluation Resilient and Robust High Performance Computing Platforms for Scientific Computing Integrity Verification of IP Security and Trust RET Site: Collaborative Multidisciplinary Engineering Design Experiences for Teachers (CoMET) Collaborative Research: Florida-IT-Pathways to Success (Fit-Path)</td>
<td>National Science Foundation (NSF)</td>
</tr>
</tbody>
</table>
| Jin, Dr. Yier | $110,000

Summary of ECE External Research Funding

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>$6,417,905 $4,482,442</td>
</tr>
<tr>
<td>2014-15</td>
<td>$4,485,689 $4,609,599</td>
</tr>
<tr>
<td>2013-14</td>
<td>$5,812,129 $4,075,433</td>
</tr>
<tr>
<td>2012-13</td>
<td>$3,794,065 $2,959,504</td>
</tr>
<tr>
<td>2011-12</td>
<td>$3,020,782 $2,458,601</td>
</tr>
</tbody>
</table>

66
Jones, Dr. W. Linwood  
Inter-satellite Radiometric Calibration (XCAL) for GPM Constellation  
Investigation of Rain-induced Oceanic Surface Salinity Stratification for SMAP  
TRMM IB11 Support  
GOLD SALMON project  
Lin, Dr. Mingjie  
I/UCRC Multi-functional Integrated System Technology (MIST)  
RET Site: Collaborative Multidisciplinary Engineering Design  
Lotifard, Dr. Saeed  
Experiences for Teachers (CoMET)  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)

Pourmohammadi Fallah, Dr. Yaser  
CAREER: Multi-Resolution Model and Context Aware Information Networking for Cooperative Vehicle Efficiency and Safety Systems  
Vehicle-to-Vehicle Communication Research: Simulation Development for Scalability  
Modeling and Control of Information-Driven Smart Transportation Systems  
Cooperative Vehicle Safety/Communication Emulator  
Qu, Dr. Zhishua  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)  
Resilience and Mission Assurance of Intelligent Machines for Secure Internet of Things

Seyedi-Esfahani, Dr. Alireza  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)

Simaan, Dr. Marwan  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)

Sun, Dr. Wei  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)

Vosoughi, Dr. Azadeh  
Foundations for Engineering Education for Distributed Energy Resources (FEEDER)

Wang, Dr. Jun  
DURIP: Next-Generation All Flash Big Data Parallel Processing Engine for Mobile Computing  
SHF: Small: Developing a Highly Efficient and Accurate Approximation System for Warehouse-Scale Computers with the Sub-dataset Distribution Aware Approach  
GOLD SALMON project

Weeks, Dr. Arthur R.  
Passive Wireless Sensor System for Space and Structural Health Monitoring  
RF: TT Comercialization Fabrication of SAW Sensor Wafers  
Darpa SPAR

Wu, Dr. Xinzhang (Thomas)  
Thermal Management of Electromechanical Actuator for Flight Control Surfaces

Yuan, Dr. Jiann-Shiun  
I/UCRC Multi-functional Integrated System Technology (MIST)  
Securing the Internet of Things (IoT) from the Hardware and Architecture Perspectives  
I/UCRC Multi-functional Integrated System Technology (MIST)

Yuksel, Dr. Murat  
NetS: Small: Collaborative Research: Multi-Element Illumination for Mobile Free-Space-Optical Networks  
US Ignite: Collaborative Research: Focus Area 1: Rapid and Resilient Critical Data Sourcing for Public Safety and Emergency Response  
OMEGA: Online Management, Experimentation, and GAme of Large-Scale Networks  
Collaborative Research: Pervasive Spectrum Sharing for Public Safety Communications

(Source: Aurora)

3.5 Externally Funded Research Centers

- FEEDER funded by DoE
- EVTC funded by US DoT
- NSF I/UCRC funded by NSF

4. Industry Partnership
The EECS Industrial Advisory Board meeting was held on June 23, 2017 at Harris Corporation Engineering Center room 113. The meeting was held to collaborate on research areas and enhancing the quality of CpE and EE undergraduate and graduate academic programs.

2017 EECS Industrial Advisory Board Members

Michael Biscoe, Duke Energy
Mike Braden, Orlando Health
Herb Gingold, RV Intelligence
Paul R. Grimes, Leidos
George Gurlaskie, Duke Energy
Jeff Hays, Northrop Grumman
Richard Hull, United Technology
W. Joel D. Johnson, Harris Corporation
Douglas L. Juul, Lockheed Martin Missiles and Fire Control
Carol Kiron, Northrop Grumman
Donna M. Kocak, Harris Corporation
Carlos Leon-Barth, Applied Visual Technology - AVT Simulation
Jose Nunes, NASA
Jim Vinson, Intersil
Robert Reedy, Florida Solar Energy Center