

## 2019 ECE Day

*Department of Electrical and Computer Engineering, Illinois Institute of Technology*

Thank you to everyone for your participation at our 2019 ECE Day on Friday, April 12, without which we would not have had such an outstanding engineering event.

The day started with a meeting with our [External Advisory Board \(EAB\)](#). ECE Faculty and EAB members shared ideas on how to continue advancing our strong engineering curriculum and research to tomorrow's industry needs. The Electrical Engineering Department is honored to have on our Board extraordinarily gifted engineers as its members. We appreciate their valuable support and trusted consultation.



**External Advisory Board (EAB) Members and ECE Faculty, 2019 ECE Day**

Dr. Bill Cardoso – CEO, Creative Electron

Guenter Conzelman – Center Director, Principle Energy/Environmental Systems Engineer the Center for Energy, Environmental, and Economic Systems Analysis, Argonne National Labs

Dr. Piyush Desai – PD Consulting Inc. & Software Motor Company

Dr. Kevin Donohue – Databeam Professor of Electrical and Computer Engineering, University of Kentucky

Dr. Jiang Hsieh – Chief Scientist, GE Healthcare & Adjunct Professor, University of Wisconsin – Madison

Dr. Mahesh Iyer – Intel Fellow, Intel Corporation

Dr. Bruno Lequesne – President, E-Motors Consulting

Mr. Paul McCoy – President, McCoy Energy Consulting

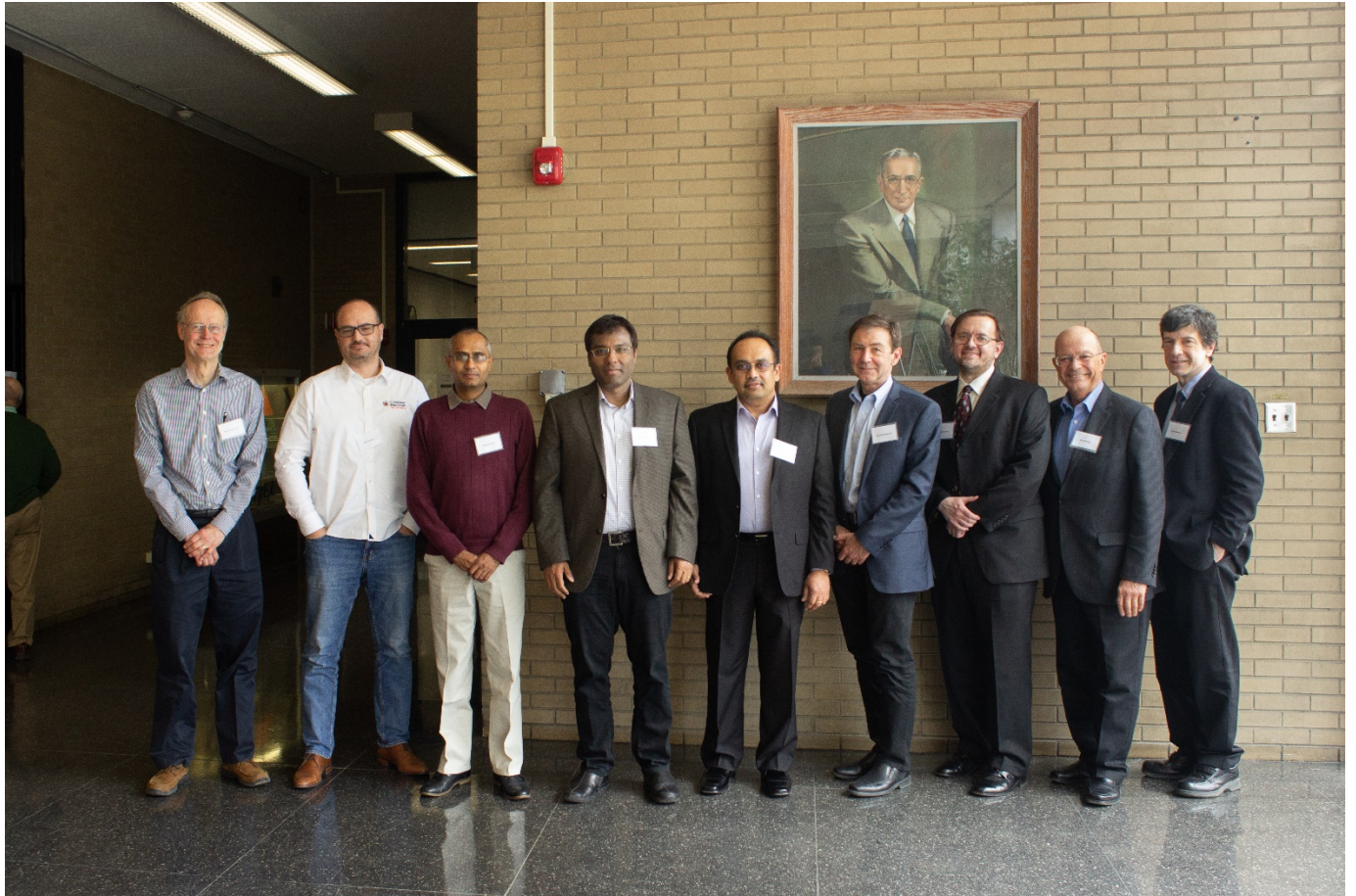
Mr. Rohit Prasad – Vice President and Head Scientist, Amazon Alexa

Ms. Wanda Reder – President and CEO, Grid-X Partners, LLC

Dr. Kenneth Zdunek – Senior VP and CTO, Roberson and Associates, LLC

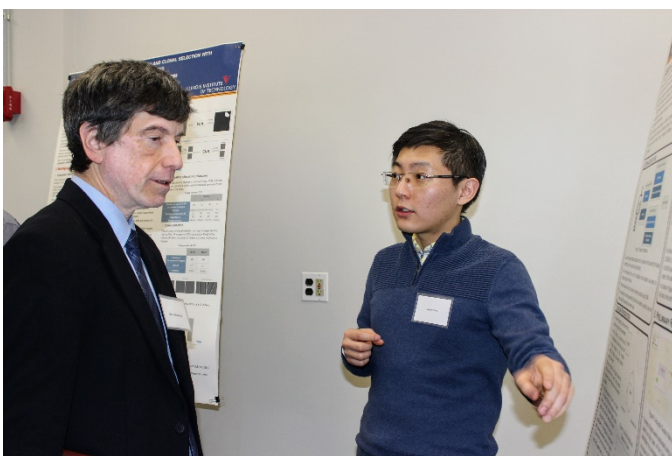
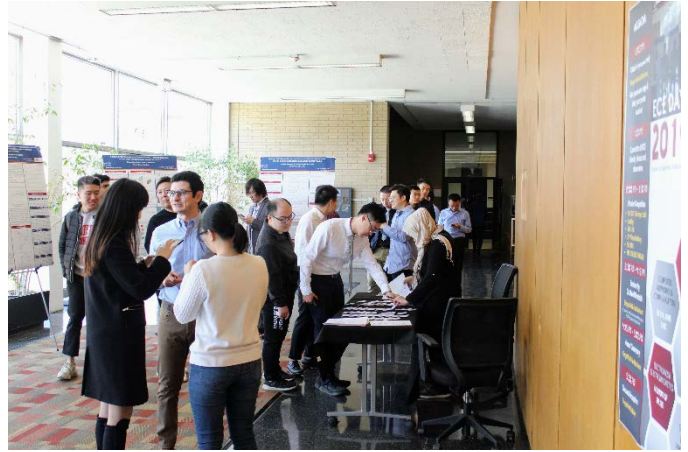




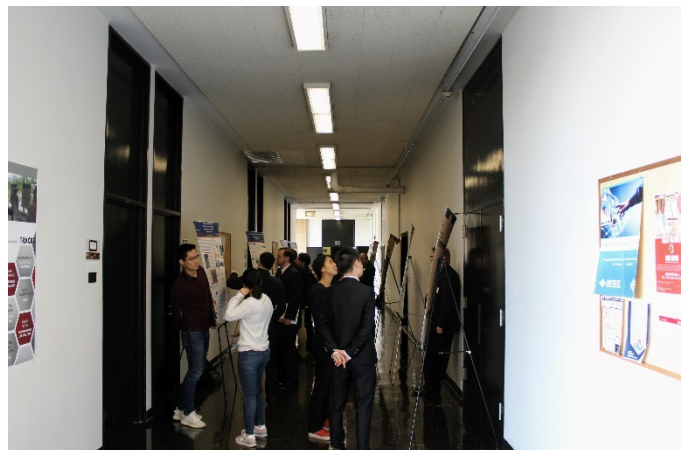
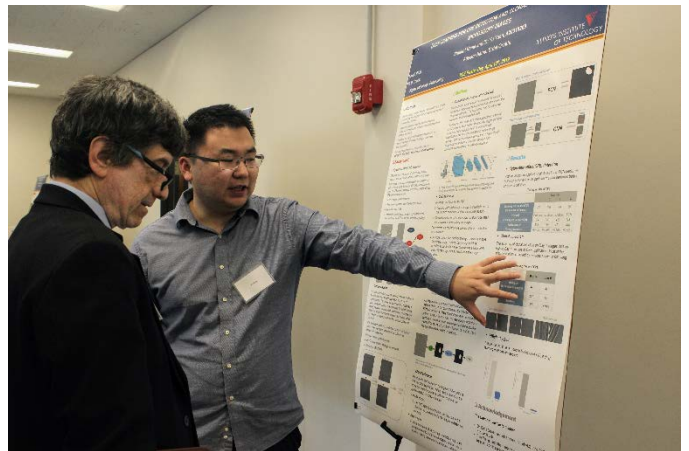
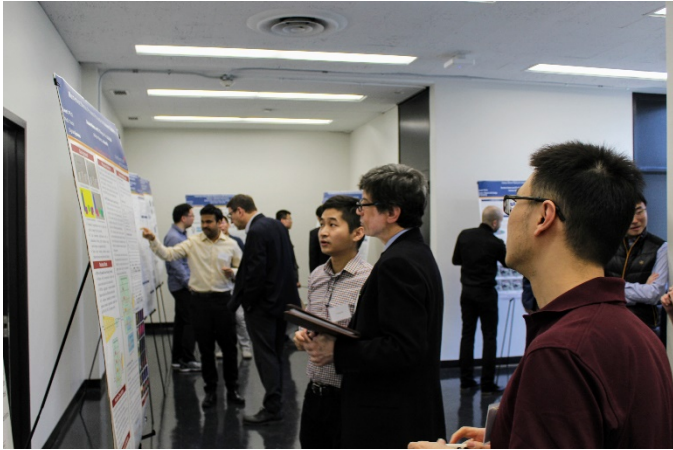
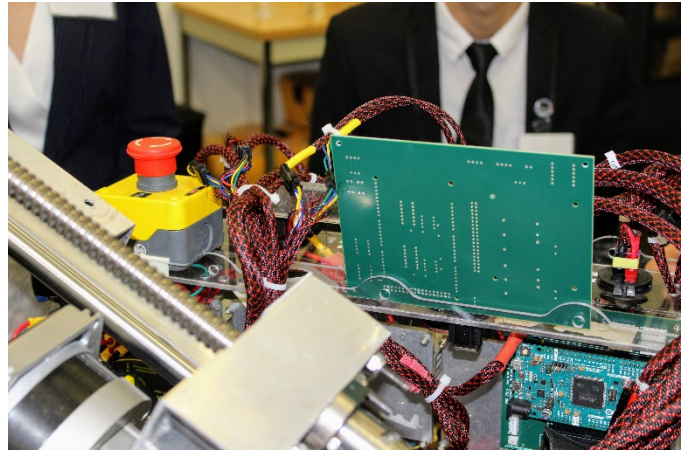
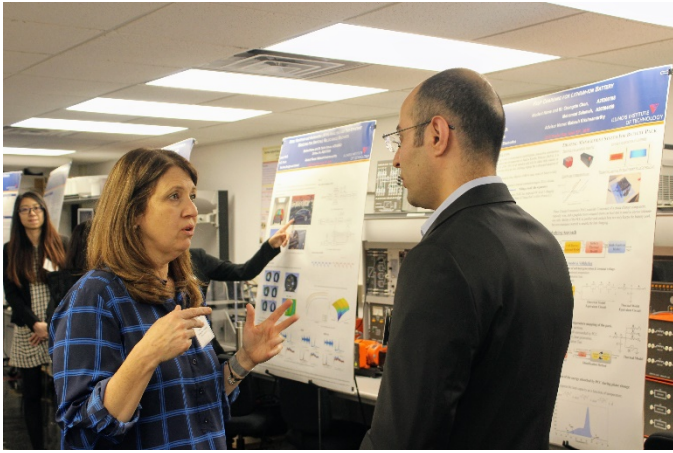




The most exciting portion of ECE Day for our students is the **Poster Competition**. *Sixty-five students presented their research*, 51 PhD, 9 Masters and 5 undergraduate research posters filled the floors of Siegel Hall.









There were 19 winning projects in the research areas of Computer Networks and Communications, Signal and Image Processing, Power Electronics, Power Systems, Digital Systems and VLSI, and Electronics and Electromagnetics. Here are the winners broken down by degree level and research area:



Winners of 2019 ECE Day Poster Competition

### PhD Track - Power Electronics

1<sup>st</sup> Place - Parham Hekmati - "Rotary-Reciprocating Movement Switched Reluctance Machines"

2<sup>nd</sup> Place - Chengxiu Chen - "Fast Charging for Lithium-ion Battery"



Parham Hekmati

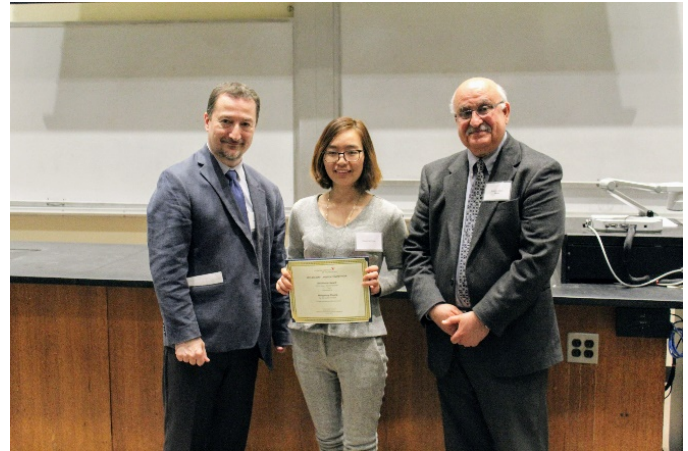
### PhD Track - Power Systems

1<sup>st</sup> Place - Hiva Nasiri - "Developing a Methodology to Evaluate the Value of Distributed Energy Resources to Distribution Network"

2<sup>nd</sup> Place - Mengmeng Zhuang - "Scalable Non-Intrusive Load Monitoring"



Hiva Nasiri



Mengmeng Zhuang

### PhD Track - Signal Image and Processing

1<sup>st</sup> Place - Zhengyu Xia - "Multi-Stage Spatial Pyramid Pooling for Semantic Segmentation"

2<sup>nd</sup> Place - Chen Zhang - "Object Detection with Location-Aware Deformable Convolution and Backward Attention Filtering"



Zhengyu Xia



Chen Zhang



### PhD Track - Computer Networks & Communications

1<sup>st</sup> Place - Shuai Zhang - "AI Meets Wireless Network Optimization: A Data-Driven Approach"

2<sup>nd</sup> Place Tie - Sami Khairy - "Energy Sustainable IoT Networks over Wi-Fi"

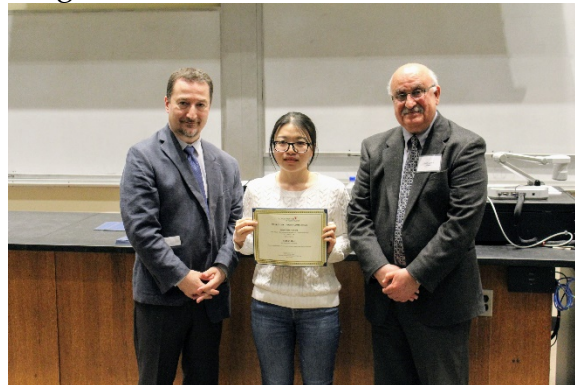
2<sup>nd</sup> Place Tie- Xuehan Chen - "Resource Allocation for Wireless Cooperative IoT Network with Energy Harvesting"



Shuai Zhang



Sami Khairy



Xuehan Chen

### PhD Track - Digital Systems & VLSI

1<sup>st</sup> Place - Shuai Li - "A Novel FPGA Accelerator Design for Real-Time and Ultra-low Power Deep Convolution Neural Network"

2<sup>nd</sup> Place - Caterina Lazaro Martinez - "Implementation of a Wearable Multisensor Artificial Pancreas on a Mobile Platform: Enhancing Safety with a Monitor Module for the Devices"



Shuai Li



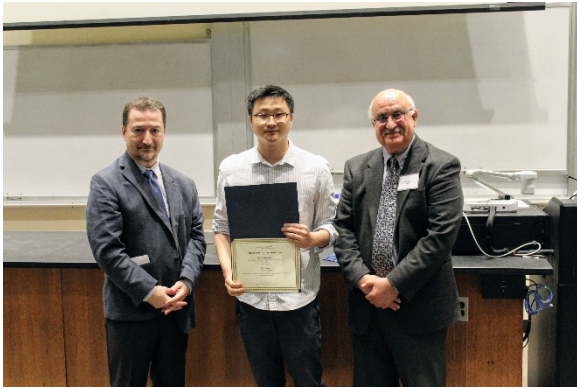
Caterina Lazaro Martinez



## PhD Track - Electronics and Electromagnetics

1<sup>st</sup> Place - Xin Huang - "Pulse Shaping and Matched Filters for Electromagnetic Acoustic Transducers Communication System"

2<sup>nd</sup> Place - Zi Wang - "Estimation of Dipole Moment from the Exterior field of a Polarized Nanoparticle"



Xin Huang



Zi Wang

## Masters Track

1<sup>st</sup> Place - Shreyash Jadish Patel - "A Model Low Power FinFET SRAM Cell Design with Better Read and Writability for Cache Memory"

2<sup>nd</sup> Place - Kangqi Chen - "Leakage Power Attack-Resilient Designs of SRAM Cells in 7nm FinFET Technology"

3<sup>rd</sup> Place - Scott Jones - "Damage Assessment of Civil Structures After Natural Disasters using Deep Learning and Satellite Imagery"



Shreyash Jadish Patel



Kangqi Chen



Scott Jones



## Undergraduate Track - Individual

1<sup>st</sup> Place Tie –David Arnold – “A Scalable IoT Platform for Remote Health Monitoring” System

2<sup>nd</sup> Place Tie – Zhongze Chen – “Improved PCA based Face Recognition by Image Processing”

3<sup>rd</sup> Place – Shen Chen – “An Economical IoT Platform for Remote Sensing and Actuation”



David Arnold

## Undergraduate Track - Team

1<sup>st</sup> Place - Formula SAE Team Representatives – Ava Kelly and Vladimir Lizak

1<sup>st</sup> Place – NASA Robotic Mining Competition Team Representatives – Norina Mae Baldera, Maggie Barclay and Yuzhe Lim



Ava Kelly  
(Formula SAE Team)



Maggie Barclay, Yuzhe Lim, Norina Mae Baldera  
(NASA Robotic Mining Team)

Recent IIT PhD Alum and poster winner from last year’s ECE Day, Dr. David Hentrich was the 2019 ECE Day Seminar guest speaker. Dr. Hentrich, Lead Software Engineer at Northrop Grumman, gave his talk “*A Journey and Lessons-Learned Through a PhD Program at IIT*”. It was of great value to our students as they received a first-hand account of David’s industry and career path and the tools he used to manage it all.





Seminar Presentation by Dr. David Hentrich at 2019 ECE Day

A special thank you to Dr. Erdal Oruklu for managing the judging for the Poster Competition and thank you to our faculty and EAB members that served as judges. We appreciate all of your time and expertise: Drs. Chi Zhou, Mahesh Iyer, Zuyi Li, Ian Brown, Guillermo Atkin, Yu Cheng, Piyush Desai, Bill Cardoso, Alexander Flueck, Geoffrey Williamson, Thomas Wong, David Hentrich, Kenneth Zdunek, Kevin Donohue, Jia Wang, Hasan Shanechi, Kenji Suzuki, Lin Cai, Joohee Kim, Ken Choi, Erdal Oruklu.

On behalf of the ECE Faculty, I would like to congratulate the winners and all those who participated in ECE Day. Special thanks go to the ECE Staff, Joannette Catino, Darnita Murphy and Won-Jae Yi and to our staff of volunteers Darryl Foong, Xin Huang, Heekyung Kim, Syeda Rabia Kamran, Pranati Rajeshbhai Trivedi, Vignesh Vasudevan, Boyang Wang, Guojun Yang, Xinrui Yu, Xin Zhang for the preparation and contributions to all phases of ECE Day.

*Jafar Saniie, Department Chair and Filmer Endowed Professor*