



School of Engineering

THE DEPARTMENT OF

# ELECTRICAL AND COMPUTER ENGINEERING

WINTER 2017-18

## CALENDAR OF EVENTS

March 1-4  
Spring Break



March 9  
Industrial Advisory  
Committee Spring  
Technical Symposium



March 29-April 2  
Easter Break



April 18  
Bro. Joseph W. Stander  
Symposium — Alternate  
Day of Learning



May 5/6  
Graduation Ceremonies



May 14  
Summer term begins



## Chair's Corner *Dr. Guru Subramanyam*



I cannot believe that I have completed eight years as the chair of the department! I started this journey in January 2010, and it ends June 30, 2018. Yes, after serving two terms, I am stepping down as the chair of the Department of ECE, at the end of this academic year (2017-18). As I reflect on these 8+ years, I am amazed at the transformations that we were able to implement in the department as a team. I have had the privilege to serve and have been truly blessed by our world-class faculty, staff and students.

In 2010, we were fortunate to bring to our department Professor Keigo Hirakawa, as tenure track assistant professor and Professor Vijayan Asari as Ohio Research Scholar Professor (ORSP) and director of the Vision Lab. I was also blessed to be the chair of the department as we celebrated our centennial in 2011 with publishing our centennial book and presenting the Centennial Distinguished Lecture Series. In 2012, we were fortunate to recruit Professor Mike Wicks as another ORSP and create the new Mumma Radar Lab. In 2013, we had support to create the Center of Excellence for Thin film Research And Surface Engineering (CETRASE) and the new Vision Lab, a Center of Excellence for Wide Area Surveillance and Computer Vision. In 2014, we officially opened the new Mumma Radar Lab, a Center of Excellence for Distributed Sensing, Radar and Tomography. In 2015, we were recognized as the Hidden Gem Index Award Winner by the *College Recruiter* magazine, in the category of Electrical and Communication Engineering, for preparing industry ready graduates. We also were fortunate to bring Professor Vamsy Chodavarapu in 2015 and create the Integrated Microsystems Lab (IML). In 2016, we were able to hire Professor Feng Ye, as assistant professor. In 2017, we were also successful in recruiting Dr. Amy Doll, who joined us as the faculty of practice.

Over the past 8 years, our department had lab and capital equipment investments of over \$8M through the Ohio Third Frontier Program, industry and external partnerships. We have also more than doubled our undergraduate and graduate enrollments over the past nine years. We could do all of these because of the dedicated faculty, staff and the support of the members of the Industrial Advisory Committee (IAC). These are golden years for the department as we plan for the future. I wish Professor Eric Balster, the new chair, effective July 1, 2018, all the very best as he leads the department over the next several years. After my sabbatical, I hope to be back to serve the department, the School of Engineering and UD! Go Flyers!!

## Article by Dr. Andrew Rettig for Kern Entrepreneurial Engineering Network (KEEN)



“The complexity and components of culture, including cultural change, have been discussed for thousands of years. Human geographers attempt to simplify these complex relationships by examining subsets of the whole. But even with these subsets, geographers confirm that there are no “givens” for interactions. So, when we expand these subsets to explain cultural change through innovations, the explanations get all the more challenging. Yet change is constant and part of our culture even as we cling to fads or trends from an earlier time. This resistance to change can lead to frustration of younger generations and ultimately cultural lag. It is precisely cultural lag that can plague our classrooms today.

When I reminisce about my years as a student, very few of those fond memories include experiences within the classroom. However, KEEN is working with professors to improve the classroom experience with entrepreneurially minded learning (EML). For my class, KEEN supported the development of a new curriculum teaching applied Internet of Things (IoT). As I developed a working relationship with KEEN through our KEEN Fellows Program, I was surprised to learn that they both supported new class development and taught techniques for improving the classroom experience and learning outcomes for students.

As a new professor, they enabled me to quickly address a gap within the college curriculum, enabling a course on the Internet of Things. With KEEN’s help, I created my class based around a customer value proposition, which the students designed from their hands-on lab experiences. Leveraging my entrepreneurial experience, I bring in clients struggling to solve real sensor networking challenges. My first IoT class raised nearly \$10,000 from these real clients. These funds were used the following semester for student led research, development and implementation of a real-time greenhouse monitoring system. The prototype network included a sensor to cloud infrastructure relying on M2M cellular communication and a smart phone app. This enabling of IoT helps student experiential education and assists the real clients of scientists, small businesses and government employees with viable proposals. Since that first class, I have continued to include clients with similar results.

The class is now offered every semester and includes expansion into additional departments. The endeavors within IoT continue to cross discipline boundaries as many of the technologies used are applicable for a variety of transdisciplinary solutions. The result is a classroom of students spanning the physical and social sciences to engineering and business. In fact, the ideal team for my class consists of an earth scientist, computer scientist and engineer. This approach has even continued to expand IoT partnerships externally gaining support for an IoT lab and an advanced IoT class in the near future. The IoT funds from the client proposals have also served to establish “Living Labs” at the University of Dayton. Now, students have ‘real’ locations to test implementations and innovate within IoT. Students must come to an understanding of what is possible; this knowledge will empower students to then realize where the innovation begins.

In closing, I leave you with one of my favorite quotes,

“What is possible is done;  
What is impossible will be done.”

–Evel Knievel

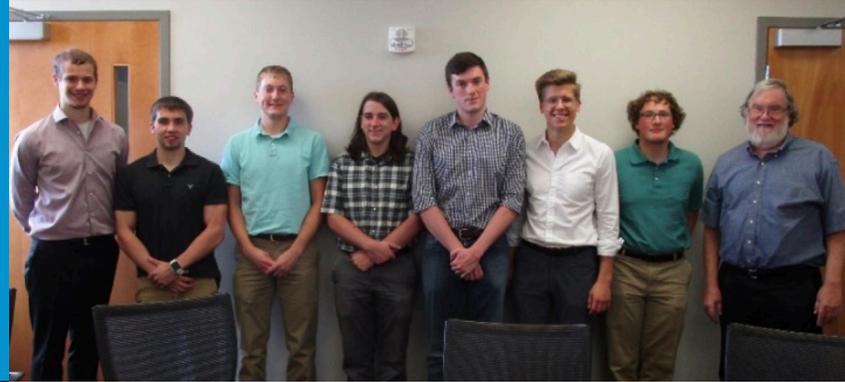
# Dr. Guru Subramanyam, Chair and Professor, and Dr. Vamsy Chodavarapu, Associate professor, featured in UD News



Pictured, top to bottom: Dr. Guru Subramanyam and Dr. Vamsy Codavarapu

On Monday August 14, 2017, the UD News published an article on Dr. Subramanyam and Dr. Chodavarapu's partnership with Spectral Energies LLC on a \$150,000 U.S. Air Force Small Business Innovation Research (SBIR) Phase-1 grant to establish Prixarc LLC. Prixarc LLC aims to market affordable and quality systems for aerospace engine control and diagnostics. Dr. Subramanyam and Dr. Chodavarapu plan to further their research and development of technology with a \$750,000 SBIR Phase-2 grant.

For more information and to view the article, please visit [https://udayton.edu/news/articles/2017/08/guru\\_vamsy\\_prixarc\\_spectral\\_startup.php](https://udayton.edu/news/articles/2017/08/guru_vamsy_prixarc_spectral_startup.php)



Pictured, left to right: Nick Vallo (HKN President), Bradley Sorg, Austin Bergman, David Kreinar, Matthew Oross, Jason Demeter, Mitchell Shimko and John Loomis (Faculty Adviser)

## Eta Kappa Nu New Members for Fall 2017

This fall, Eta Kappa Nu (HKN) welcomed six new members. As described on the UD website, HKN is “a unique membership organization dedicated to encouraging and recognizing excellence in the electrical and computer engineering fields. Members consist of students, alumni and other professionals who have demonstrated exceptional academic professional accomplishments.”

*Congratulations to all new members!*

## Ibrahim Aldaouab Places First!



ELE doctoral student, Ibrahim Aldaouab, was awarded 1st place in the poster competition at the 6th Annual International Energy & Sustainability Conference held at Farmingdale State College. The poster was titled “Microgrid Battery and Thermal Storage for Improved Renewable Penetration and Curtailment.” Congratulations to Ibrahim on his outstanding achievement.

## ECE Grad from 1929 Recognized with Award

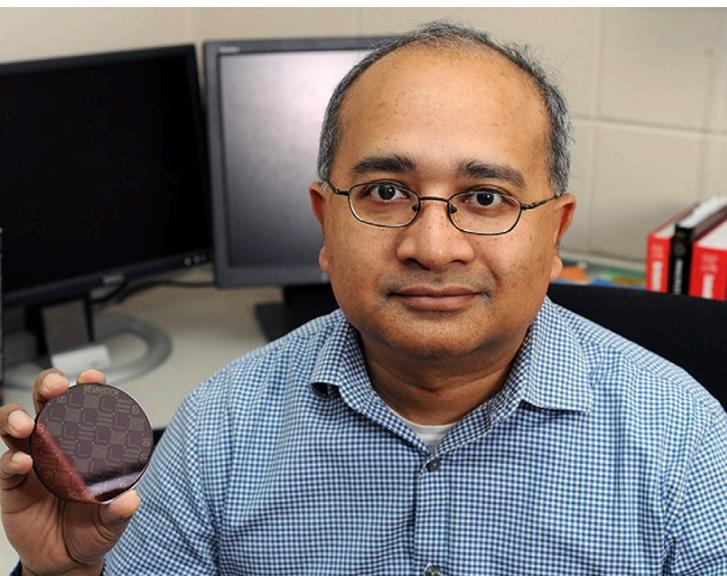
The School of Engineering recognized Joseph Desch '29 as one of two recipients for the 2017 Alumni Awards. Desch is widely credited as developing the first modern computer and received the Distinguished Alumni Award. The awards ceremony was held on September 9, 2017.

For more information and to view the article, please visit

<https://udayton.edu/blogs/engineering/2017/17-09-12-2017alumawards-desch-joseph29-beran-john74-79.php>



## Dr. Tarek Taha in the Dayton Daily News



On October 31, 2017, an article was published in the Dayton Daily News entitled, "UD Researcher Wins Funding to Develop 'Brain-inspired' Computer Chip." The article outlines the \$440,000, three-year National Science Foundation Award for the development of an artificial intelligence computer chip.

For more information and to view the article, please visit:

<http://www.daytondailynews.com/news/researcher-wins-funding-develop-brain-inspired-computer-chip/bwbd95lkQoU6jNHHLrsRgN/>.

WHIO TV also released a short clip on Dr. Taha's funding and development. Please visit this link to access the video:

<http://mms.tveyes.com/MediaCenterPlayer>.

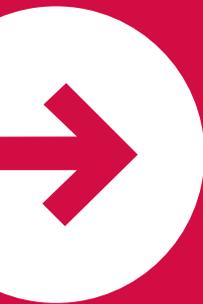


## Interview for UD International Education Week 2017

Dr. Guru Subramanyam, Department Chair and Professor, was interviewed as part of UD's International Education Week 2017. Dr. Guru answered questions centered around his passion for international education, intercultural experiences and his travel adventures.

For more information and to view the article, please visit

<https://www.udayton.edu/blogs/internationalud/17-10-31-guru-subramanyam.php>.



## Dr. Michael Wicks Recognized as Co-Recipient of Award

Just recently announced, our very own Dr. Michael Wicks was named a co-recipient of the 2017 IEEE Aerospace and Electronic Systems Society M. Barry Carlton Award. The award recognizes a paper published five years ago by Dr. Wicks and the other co-recipients. To view the paper, please visit:

<http://ieeexplore.ieee.org/document/8085356/>.



## Dr. Keigo Hirakawa Explores Japan While on Sabbatical

Dr. Keigo Hirakawa is on sabbatical at the University of Tokyo until May 2018. (Picture is from his time in Japan.) He gave a keynote presentation at the Picture Coding Symposium of Japan, 2017. He also traveled to Beijing, China, for the IEEE International Conference on Image Processing 2017, where his lab had four presentations.

## Sean Malek Named As Representative from the ECE Department



Sean Malek was selected by the 2018 IEEE Aerospace and Electronic Systems Society Board of Governors (AESS BoG) to be an undergraduate student representative. He is a sophomore computer engineering major. Sean states, “I am incredibly honored to have been selected to fill the position of undergraduate student representative for IEEE AESS BoG. In this position, I will not only work with the AESS BoG to complete many tasks, but also work with student members and their branches to promote activities across the society worldwide. More specifically, these tasks include: serve as non-voting member of the AESS BoG, sustain regular dialogue between the AESS BoG and AESS student members, motivate and lead students in organizing new and creative AESS-relevant activities, and report on student activities at AESS BoG meetings.

I applied for this position, not because I have any unique experience in aerospace or electronic systems, but because throughout my life, I’ve always had a passion for trying things that are new and insightful. Ever since my sophomore year of high school, I’ve had a major inclination to study engineering in college, but for a long time, I had no clue as to which discipline. It wasn’t until the second semester of freshman year at UD that I decided to become a computer engineer. Programming was something very new to me, similar to this AESS position, and as soon as I began to gain experience in computing, I knew I loved it. I plan to bring this same excitement to my new position as the undergraduate student representative of AESS BoG.”

## James Ryan Kronk Recognized as Recipient of the IEEE PES Scholarship Plus Initiative

ECE student, James Kronk, is one of 210 Power and Energy Society (PES) scholarship recipients who were selected from 116 U.S., Puerto Rican and Canadian universities for the 2017-18 academic year. The initiative recognizes undergraduate students who have declared a major in electrical and computer engineering, are high achievers with strong GPAs with distinctive extracurricular commitments, and are committed to exploring the power and energy field. Congratulations to James for this achievement!



Pictured, left to right: James Kronk and Dr. Guru Subramanyam

## Dr. Feng Ye's Conference Adventures



Pictured: Feng Ye on left  
(Invited Talk at Donghua University in Shanghai, China)



(IEEE CyberSciTech 2017 with student presenter, Yunjun Sun)

Dr. Feng Ye traveled extensively during the Fall semester 2017. He attended and participated in presentations at the IEEE CyberSciTech Conference in Florida in November and the IEEE Globecom Conference in Singapore in December. In December, he also was invited to talk at Donghua University in Shanghai, China, and at Nanjing University of Posts & Telecommunications in Nanjing, China.



## December 2017 Graduates



### Undergraduate

- Adam M. Abele
- Amani Alkhudair
- Ibrahim M. Alqallaf
- Abdulmalek A. Alqarni
- Chenyang An
- Ashley L. Brown
- Jacob E. Bruns
- Carl J. Cusumano
- Brian D. Hartnett
- Hussain Lari
- Branden T. McNally

### Ph.D.

- Ouboti Djaneye-Boundjou
- Barath Narayanan

### Graduate

- Anjanika Bandyopadhyay
- Gayatri Mayukha Behara
- Luyu Bo
- Husain Buhasan
- Satya Prashanth Reddy Challa
- Vinay Kumar Raju Dasariraju
- Drew E. Dieckmann
- Gary D. Drummond

- Venkateswarlu Gollapudi
- Matthew D. Howard
- Sahith Javvaji
- Patrick K. Martell
- Jumana Moqaddam
- Anthony J. Reiling
- Larry D. Sanders
- Thomas C. Sharp
- Balaadithya Uppalapati
- Kelsey M. Van Oss
- Ajith Kumar Veerboina
- Zhihan Zhang