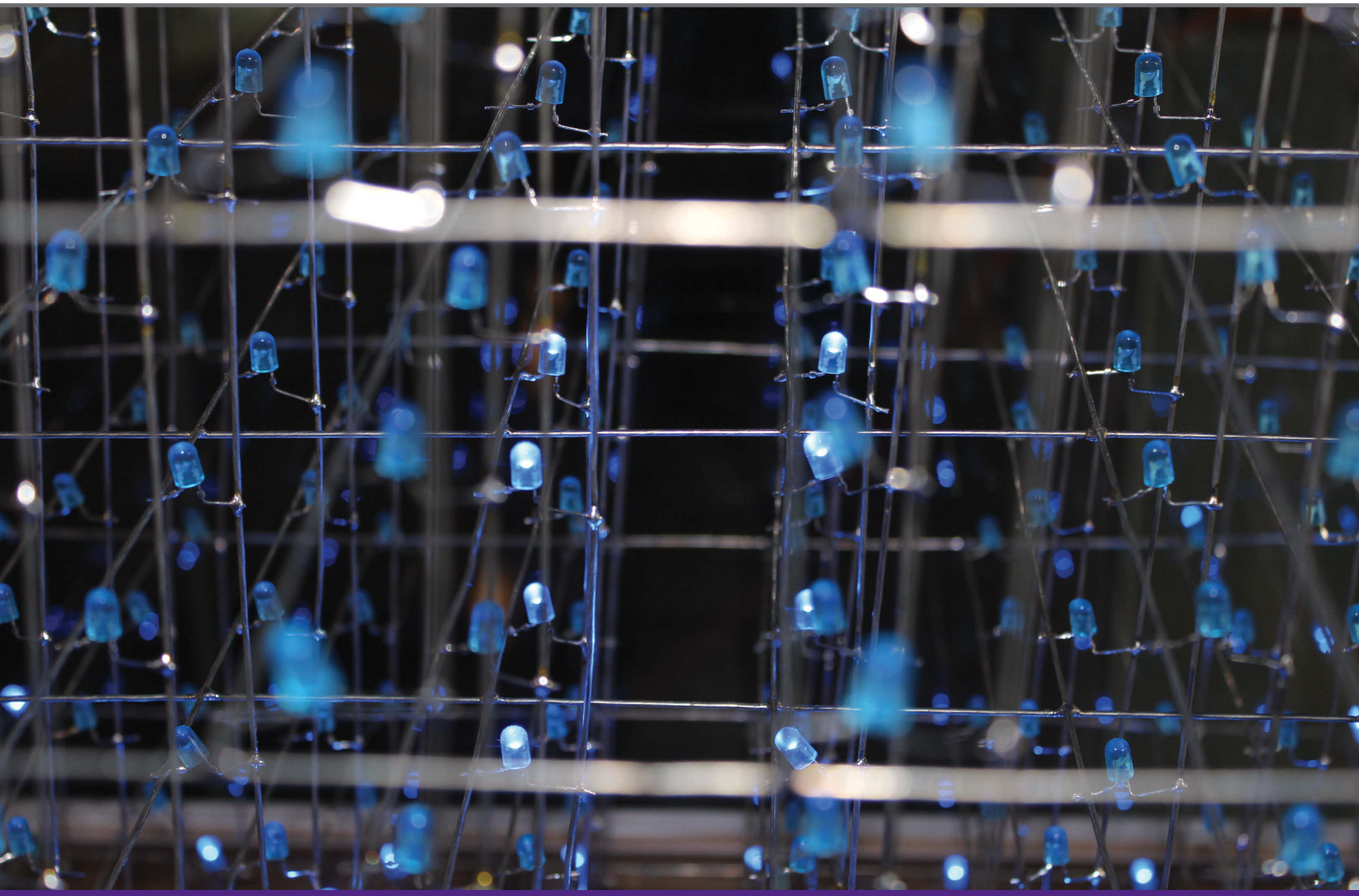
ECE UPLINK

ELECTRICAL AND COMPUTER ENGINEERING SUMMER 2017 COLLEGE OF ENGINEERING



KANSAS STATE UNIVERSITY

FROM THE DEPARTMENT HEAD

Once again, we are happy to present our annual newsletter from K-State electrical and computer engineering. This has been an exciting and challenging year as we continue to explore new opportunities within the very real constraints of a land-grant university in the state of Kansas. As you look through the different articles and photos, you will see we have had a lot going on. Activities include preparing our ABET accreditation materials in advance of our October 2017 accreditation visit, and development of a new undergraduate degree program in biomedical engineering.

As with other departments in the College of Engineering, ECE faculty and staff have spent countless hours preparing documentation for the upcoming accreditation review visit this fall for both our computer engineering and electrical engineering programs. If all goes well, at this time next year, we will know whether our programs are ABET-accredited for another six years. Another major effort in place since the summer of 2016 has been development and approval of a new undergraduate program in biomedical engineering, set to begin in the fall semester of 2018. This program builds on the strength of our bioengineering emphasis area in electrical engineering, and we see it as a way to grow undergraduate enrollment and research in our department. This year we were also excited to release two new videos to enhance undergraduate recruitment efforts. Please view and share these videos with others, available at www.ece.k-state.edu.

Another highlight from this past year includes a successful faculty search with two new faculty members joining us before the start of the fall semester. Sungo Kim specializes in plasma medicine, plasma physics and nanomaterials for use in biomedical applications. He joins us after previous stops at Clemson University and the New York Institute of Technology. Mohammad Shadmand is joining us after receiving his Ph.D. and working as a postdoc at Texas A&M in the area of power systems and power electronics. He will be assuming directorship of our Smart Grid Lab. Another new addition to the ECE family this past year was Brenda Gfeller, who joined us in August 2016 as an Accountant II after previously working in other departments at K-State. Steve Booth retired in December, and we were fortunate to hire engineering graduate Kevin Myren into that position.

This newsletter also highlights many of the recent student and faculty accomplishments. We are proud of the excellence these recognitions promote, and it is exciting to see our incoming students enroll this summer and consider what great accomplishments each of them will make while here with us. We applaud as well the achievements of many of our alumni. Whether through recognition at our Seaton Society celebration, or those of you being recognized by your employers or professional societies, we love hearing about our alums' accomplishments. Please let us know your recent news by sending a quick note to alumninews@ece.ksu.edu. And please plan to join us at our annual department banquet the evening of Friday, Oct. 20.

Go Cats!

Don M. Gruenbacher
Department Head
Electrical and Computer Engineering

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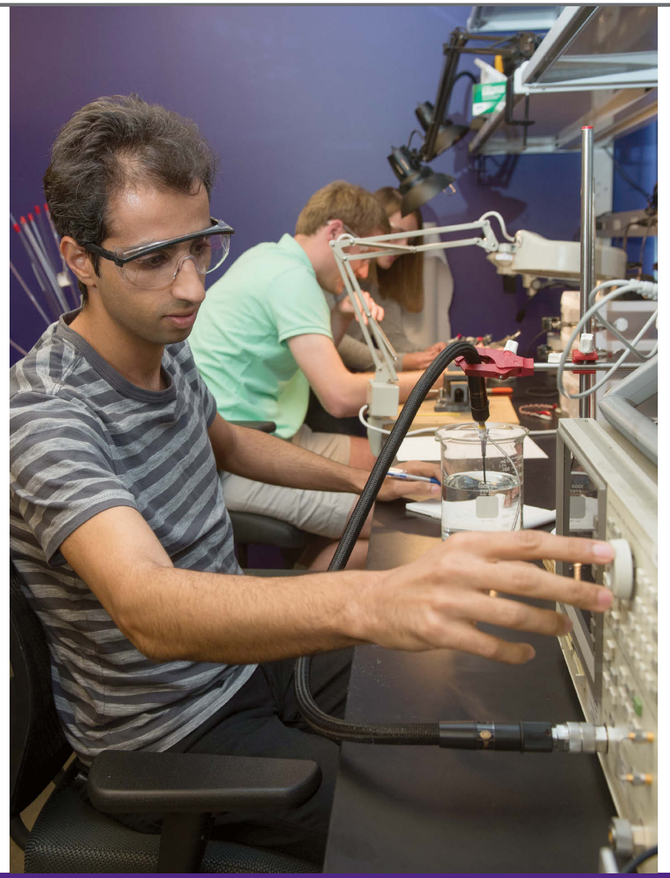

IN THIS ISSUE

EDUCATION
LEADERSHIP
EXCELLENCE
DISCOVERY

ON THE COVER

L.E.D. CUBE, CREATED FOR ECE 590 SENIOR DESIGN CLASS, CURRENTLY LOCATED IN 3108 ENGINEERING HALL

LEFT

HOJJAT FALLAHI, LEFT, ECE PH.D. STUDENT, CHARACTERIZES PROTOTYPE MICROWAVE ABLATION ANTENNAS IN THE BIOMEDICAL COMPUTING AND DEVICES LAB.

ECE UPLINK

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FULBRIGHT EXPERIENCE ALLOWS NATARAJAN TO EXPAND HORIZONS

NATARAJAN AT DIT UNIVERSITY

LOHRI FESTIVAL AT HOSTEL IN MUSSOURIE

From Jan. 1 to Feb. 11, 2017, Bala Natarajan visited DIT University in India as a Fulbright specialist. The Fulbright Specialist Program, established in 2001 by the U.S. Department of State, Bureau of Educational and Cultural Affairs, pairs highly qualified U.S. academics and professionals with host institutions abroad to share their expertise, strengthen institutional linkages and gain international experience while building capacity at their overseas host institutions.

Set in the foothills of the Himalayan Mountains, DIT University offered a scenic setting for a productive visit that was fruitful across multiple dimensions. One of the main goals of the specialist project was to empower and train faculty in research and teaching, so that a six-week visit can have a lasting impact on both students and the university.

"These global experiences help you grow as a person and celebrate our similarities rather than focus on our divisions."

— Bala Natarajan

With almost daily presentations on research topics ranging from 5G wireless, IoT and cyber physical systems, statistical learning and data science, and game theory, to one-on-one meetings with faculty, and undergraduate and graduate students, the visit helped advance the research enterprise at DIT. In order for students and faculty to better understand and appreciate the teaching style at U.S. higher educational institutions, Natarajan also offered two short courses — "Performance of Digital Modulation Schemes" and "Information Theory" — for a university-wide audience. He also conducted workshops on "How to Become a Successful Researcher" and "Effective Teaching Methodologies" that were appreciated by students, faculty and university leadership.

LOCALS PARTICIPATE IN "PRAYER TO THE RIVER GANGA" AT HARIDWAR

In addition to academic activities, Natarajan had the opportunity to explore the mountains in and around DIT University. With the famous resort town of Mussourie less than 25 km away, the area offered many hiking trails and scenic vistas. Staying on campus, Natarajan enjoyed interactions with students and was able to participate in many student events including Indian Republic Day celebrations.

"While I started this project with the hope of assisting DIT university expand and advance its research and academic programs, I believe I was the one who benefited more — with a fresh and a better understanding of the role of research and learning in different communities," Natarajan said. "These global experiences help you grow as a person and celebrate our similarities rather than focus on our divisions."

Natarajan hopes to continue working with DIT University and other institutions around the world to not only advance research and education, but to better understand how technology can help transform lives across the globe.

MINIATURIZATION OF MICROELECTRONIC DEVICES

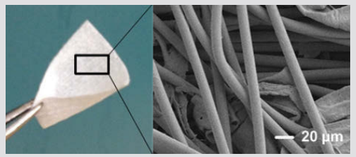
Great demand exists for miniaturization of microelectronic devices in various engineering sectors, including defense and commercial industries, as well as portable personal electronics. This would allow various electronic components to be integrated with sensors/actuators to realize multifunctional microsystems. However, it has been challenging to meet all the requirements of small size, light weight and multi-functionality, while enhancing performance.

Jungkwun Kim, ECE assistant professor, has dedicated his research to finding engineering solutions to these challenges by utilizing nanotechnology and microfabrication. Accordingly, Kim's Nano Micro Electronics Laboratory in ECE has focused on development of the 3D microfabrication process and its applications, including an integrated 3D inductor for smart devices and flexible energy storage.

Under his direction, the Nano-Micro Electronics Laboratory has been developing a UV-LED lithography system as a versatile 3D microfabrication method. The UV-LED lithography system comprises UV-LED array as a light source, a tilt-rotational stage underneath the light source to control a light-exposure angle and a computer as the main control.

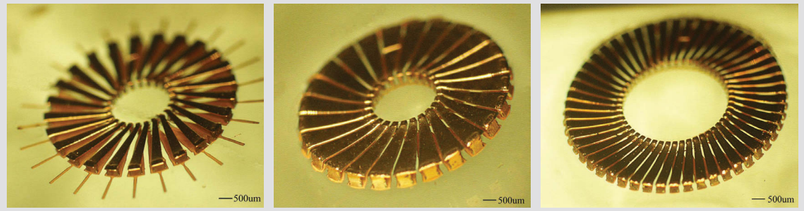
KIM VIEWS MICROCHIP THROUGH 3D DIGITAL MICROSCOPE

The Nano-Micro Electronics Laboratory has focused on development of micro-scale-power electronic devices. Most commercial switching frequencies for power converters are in the low-(0.5-10) MHz regime, with research being conducted to push these frequencies up to 100 MHz and beyond. In the nearer term, miniaturized inductors with sufficient inductance and power-handling capability in the range of 5-10 MHz are of great interest. Kim has utilized a 3-D, lithographically defined, micromachining technology to fabricate the micro 3-D power inductor with highly dense windings. This approach resulted in a great reduction of overall power-chip size to within cubic inches, and has demonstrated high efficiency of 96 percent at 20W and 93 percent at 50W, respectively. This has produced the smallest power converter with the highest power efficiency when compared to similar specs of power converters.

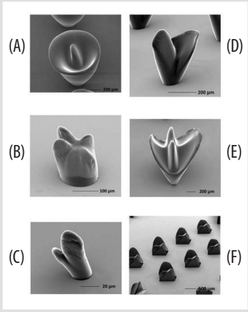


FABRIC UNIT FOR FLEXIBLE ELECTRODE FOR PAPER BATTERY

To circumvent the cost and need for specialized equipment for nanofiber fabrication and metal deposition, low-cost materials and simple fabrication processes are greatly needed. Kim has developed an accessible method to generate metal-coated fabric electrodes for a flexible battery application. This demonstrated flexible battery has great potential for use as a future, low-cost, flexible energy-storage device.



MICRO-INDUCTORS — FROM LEFT, 25-TURN SPARSELY WOUND INDUCTOR, 25-TURN DENSELY WOUND INDUCTOR AND 50-TURN DENSELY WOUND INDUCTOR



FABRICATION RESULTS — (A) MICRO-'HORN,' (B) MICRO-'CAT'S CLAW,' (C) MICRO-'HI,' (D) MICRO-'CALLA LILY,' (E) MICRO-'COWBOY'S CAT,' AND (F) MICRO-'TABLE NAPKIN'

— REF. JOURNAL OF MICROMECHANICS

RESEARCH FOCUS

Hongyu Wu, ECE assistant professor, addresses emerging technical challenges in power and the energy sector with systems engineering approaches that integrate mathematical optimization, computer and network systems, communication engineering, cyber physical systems, control and social science.

His areas of emphasis include the following:

- Planning, operation and control of the electric grid (smart grid, microgrid)
- Transactive energy systems (electricity market + smart distribution grid)
- Internet of Things (IoT) — Smart home/building energy management systems
- Big data — forecasting of renewable generation and electricity load
- Synergy among electricity, water, food, transportation and other critical infrastructures
- Mathematical modeling and optimization of large-scale systems

Wu is an IEEE senior member and has extensive academic, national laboratorial and industrial experiences in his research areas. Prior to joining K-State, he worked as a post-doc at the Robert Galvin Center for Electricity Innovation at Illinois Institute of Technology, and as a research engineer in the Power Systems Engineering Center at the National Renewable Energy Laboratory. He has published more than 50 book chapters, has peer-reviewed journal and conference papers, and holds three software records/copyrights. His papers were selected as IEEE Power and Energy Society General Meeting Best Papers in 2015 and 2016. He has served on a number of technical review committees in national laboratories and governmental agencies.

EE ALUM SNYDER INDUCTED INTO HALL OF FAME

Mitch Snyder, Fort Worth, Texas, a 1983 graduate of Kansas State University in electrical engineering, was inducted into the College of Engineering Hall of Fame in April 2017. Induction to the hall of fame is the highest honor bestowed on its alumni by the college. Honorees are recognized for their professional success and accomplishment, involvement with and support of the College of Engineering, dedication to K-State, and professional and public service.

Snyder is president and chief executive officer of Bell Helicopter, a company he joined in 2004, previously having served as executive vice president, military business, where he was responsible for direction, management and performance of all government programs. He also led several of Bell's strategic initiatives, including overall direction of the V-22 Osprey program. Snyder has more than 30 years of experience in the aerospace and defense industry, and he has completed the Defense Institute for Security Assistance Management Executive Course. Before joining Bell Helicopter in 2004, he had several leadership positions with Lockheed Martin in engineering, business development, manufacturing and program management. He also has more than a decade of working with customers internationally throughout Europe, Asia and the Middle East. Snyder was named Alumni Fellow by the College of Engineering in 2015. He is originally from Garden City.

ALUMNI EARN HONORS FOR CAREER SUCCESS

The College of Engineering honored 10 alumni for professional career accomplishment during the first 20 years following their graduation at ceremonies on April 1. Recipients of the college's Professional Progress Award were nominated by their respective department heads and confirmed by Darren Dawson, dean of engineering.

From electrical and computer engineering —

Zachary Maier, Ottawa, is a 2009 graduate of Kansas State University in computer engineering. He is currently a product manager at Google Inc. where his responsibilities include managing the New York team, and setting strategy for Google Maps and Google Local Search, two products used by more than a billion people. Maier began his career in 2009 as part of Google's prestigious Associate Product Manager program, and over the last eight years has led teams building Google's internal infrastructure, Google's advertising products and Foursquare's local business platform. Maier and his family recently established scholarships for students at both Kansas State University and Central Heights High School, where he sponsors and mentors students as part of the FIRST Robotics program.

Deia Bayoumi, Cary, North Carolina, is a 2000 graduate of Kansas State University with a master's degree in electrical and computer engineering. He also has an MBA from DeSales University; a professional engineer license from Ohio's Engineers and Surveyors Board; and an executive certificate in technology, operations and value chain management from MIT Sloan Management. He is currently employed by ABB as head of global product management for distribution transformers, responsible for managing an estimated $1 billion product portfolio. Before appointment to his current position, Bayoumi had several progressive leadership positions at ABB including vice president technology and engineering for its HVDC North America business, and vice president and general manager for its substation automation business. His accomplishments include IEEE senior member status; ABB Inc.'s Inventor of the Year two years in a row; three U.S.-issued patents; and more than 22 patent applications worldwide.

PAHWA NAMED UNIVERSITY DISTINGUISHED PROFESSOR

Kansas State University honored five professors as 2017 university distinguished professors, a lifetime title that is the highest honor the university bestows on its faculty members. One professor who received that distinction is ECE's Anil Pahwa.

Distinguished professors are appointed following a university-wide nomination and evaluation process conducted by the provost. Each received a personalized plaque and medallion at the university's fall 2017 commencement ceremonies.

Pahwa holds the Logan-Fetterhoof electrical and computer engineering faculty of distinction chair. His research focuses on reliability, automation and optimization of power distribution systems. His work has provided innovative and practical solutions for electricity distribution as well as large-scale integration of renewable energy resources in the system to decrease dependence on fossil fuels.

He joined Kansas State University in 1983 and served as the ECE department head from 2004 to 2007. He has engaged in 38 funded research projects with about $8.8 million in total funding, largely from the National Science Foundation. He has been the lead principal investigator on 28 of these projects. Pahwa has published more than 225 articles and reports with more than 60 refereed journal papers and his research has received more than 2,400 citations.

Pahwa is an Institute of Electrical and Electronics Engineers, or IEEE, fellow and has served in many leadership positions in IEEE Power and Energy Society, or PES, during the past 20 years, including chair of the Power and Energy Education Committee and editor of IEEE Transactions on Power Systems.

He has served on the advisory committee of DistribuTECH, a premier conference focused on automation of power distribution systems, for more than 25 years. The National Academies selected Pahwa for a 2014-2015 Jefferson Science Fellowship and he served as a senior scientific adviser in the Economic Policy Office of the State Department's Bureau of East Asian and Pacific Affairs as a part of the fellowship.

Pahwa has received several awards during his professional career, including the IEEE PES Douglas M. Staszesky Distribution Automation Award in 2012 and the Outstanding Alumni Award from Birla Institute of Technology and Science in 2014. At Kansas State University he received the College of Engineering's Erickson Public Service Award in 2011 and Frankenhoff Outstanding Research Award in 2012.

Pahwa earned his doctorate in electrical engineering from Texas A&M University in 1983; his master's degree in electrical engineering from the University of Maine, Orono in 1979; and his bachelor's degree in electrical engineering from Birla Institute of Technology and Science in Pilani, India, in 1975.

"Our five newest university distinguished professors truly display high-caliber leadership in teaching, research and service," said April Mason, university provost and senior vice president. "Their accomplishments are key in our goal to become a Top 50 public research university by 2025, and I want to congratulate them on their newest achievement in becoming university distinguished professors."

TWO NEW FACULTY JOIN ECE DEPARTMENT

Sungo Kim, joined the ECE department as an associate professor in June 2017. He was previously an assistant professor in the ECE department at the New York Institute of Technology. His research interests are plasma medicine, plasma physics and nanomaterials for flexible, transparent and stretchable electronics and biomedical applications. He earned his B.S. in electrical engineering with the Presidential Award at Howon University in Korea in 1996. He received his master's and doctorate degrees in electrical engineering from Inha University in Korea in 1998 and 2000, respectively.

Mohammad B. Shadmand, will join the ECE department as an assistant professor in August 2017. He received his bachelor's degree in electrical engineering from Qatar University, Doha, Qatar, in 2010. He received master's and doctorate degrees in electrical engineering from Texas A&M University in 2012 and 2015, respectively. He was previously a research professor at Texas A&M.

FACULTY NEWS AND AWARDS

- **John Devore**, professor, received the 2016 College of Engineering Robert R. and Lila L. Snell Excellence in Undergraduate Teaching Award.
- **Ruth Douglas Miller**, associate professor, is the recipient of the Erickson Public Service Award and the 2017 Eta Kappa Nu Distinguished Faculty Award.
- **Behrooz Mirafzal**, associate professor, is the recipient of the 2017 Dean's Award for Excellence in Research.
- **Anil Pahwa**, professor, is the recipient of the Snell Distinguished Career Award.
- **Punit Prakash**, assistant professor, was named Outstanding Assistant Professor.
- **Caterina Scoglio**, professor, is the recipient of the LeRoy and Aileen Paslay Professorship in Electrical and Computer Engineering, and the 2016 College of Engineering Frankenhoff Outstanding Research Award.
- **David Soldan**, emeritus professor, is the recipient of the 2016 Institute of Electrical and Electronics Engineers-Eta Kappu Nu Distinguished Service Award.
- **Steve Warren** was promoted to professor.

STAFF RETIREMENT

Steve Booth, ECE electronics technician, retired Dec. 16, 2016, after 32 years of dedicated service. Booth has served a critical role over the years in setting up labs, creating kits, fixing equipment and helping in every way possible. He plans to spend the first year of his retirement remodeling his home and spending time with family.

BIOMEDICAL ENGINEERING DEGREE PROGRAM TO BE OFFERED IN 2018

The department of electrical and computer engineering has developed a new undergraduate degree program — biomedical engineering. After passing a thorough and exhaustive approval process this year, final approval was granted by the Kansas Board of Regents in June.

Led by Steve Warren, ECE associate professor, with assistance from other biomedical faculty Punit Prakash and David Thompson, the 133-credit-hour curriculum has gone through 13 levels of approval by various committees and governing bodies at K-State and the Board of Regents. The program will be officially available in fall 2018, with recruitment for new students occurring during the 2017-2018 academic year.

Taking advantage of strengths of existing faculty and their research programs, the new degree will initially offer two different areas of emphasis — biomedical sensors and devices, and biomedical computation. It will be the third bachelor's degree program offered by the department.

NEW ECE STAFF POSITIONS

Brenda Gfeller was hired as ECE accountant in August 2016. She has been at K-State more than 29 years with the majority of that time in Student Services, Career and Employment Services, and Counseling Services. She lives on a farm west of Junction City. Her hobbies and interests include fishing, trying a new Pinterest idea or recipe, and spending time with family. She received the University Support Staff Meritorious Service Award in April 2017.

Kevin Myren has joined ECE as an electronics technician. He came to Ft. Riley in 2006 as a member of the U.S. Army, and after serving six years with two deployments to Iraq as a Blackhawk Helicopter crew chief, decided to further his education at K-State, graduating in 2016 with a B.S. in mechanical engineering. He worked three years in the IMSE department assisting students in the manufacturing shop, and will strive to continue to help ECE students create strong finished products.

Garrett Peterson is the new ECE academic adviser and instructor, joining the department in August 2016. He previously worked at Garmin International in Olathe in the aviation weather radar group as a design engineer. He received his B.S. in EE from K-State in 2015 and is currently pursuing his Ph.D. here in EE.

Peterson serves as primary academic adviser to freshmen and sophomores in ECE. He also teaches the new student design project course that gives students a broad overview of electrical and computer engineering in a semester-long design project. He replaces Andy Fund who became assistant dean for student services in the College of Engineering in May 2016.

You are cordially invited to the ECE Annual Banquet, Friday, Oct. 20, 2017, at the K-State Alumni Center. For more details or to RSVP, send an e-mail to rsvp@ece.ksu.edu

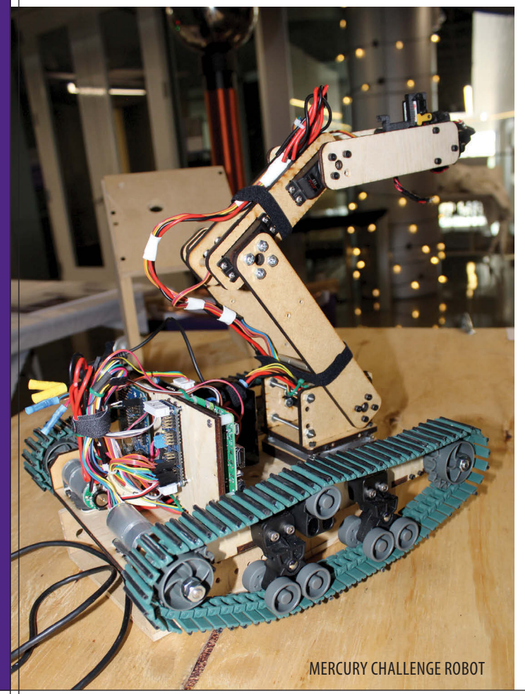
NEWS

ROBOT TEAM PLANS, PREPARES FOR COMPETITIONS

The goal of the Kansas State University Robot Competition Team, or KSURCT, is to teach students — no matter what their major — how to apply their knowledge and skills to designing a competition robot. Members' activities include impromptu classes on soldering, programming, board design, coding repositories and 3D modeling.

KSURCT takes part in several competitions across the nation, including the following recent events:

- Mercury Challenge – task-oriented maze meant to simulate driving a rover by placing a driver at least 50 miles from the robot
- BotsKC – combat robotics competition to learn the design process and documentation of building a fighting robot
- Micromouse – competition held in California to solve a maze as fast as possible with an AI robot



MERCURY CHALLENGE ROBOT

The team had a large influx of members in the past year, allowing it to form several teams and compete in more than one event at a time. Both the combat robot and Mercury Challenge bot were featured during Engineering Open House this year, entertaining children and parents alike.

KSURCT plans to continue the tradition of learning through competition next year, while members say they are hoping for an update in equipment and additional tools to assist the club in its endeavors to represent K-State in the best possible way.

ECE GRADUATES

M.S. and Ph.D. graduates

December 2016

Jeffery Lee Chai
Futing Fan
Chao He
Cody Kaufmann
Joshua Ryan Melander
Narges Montazeri Shahtori
Alan Phung
Kyle Dean Rogge

Kan Chen – Natarajan (Ph.D.)
Dissertation: *Physical Layer Security in Co-Operative Mimo Networks — Key Generation and Reliability Evaluation*

B.S. graduates

December 2016

Majid Adel Alkhalil, *Safwa, Saudi Arabia*
Abdulraheem Adnan Alkhiary, *Jeddah, Saudi Arabia*
Douglas Stephen Anjard, *Overland Park*
Valerie Jean Binns, *Hiawatha*
Kevin Andrew Brashears, *Desoto*
Brian Richard Brazill, *El Dorado*
Zhongze Fan, *Jinan, China*
Sile Hu, *Hohhot, China*
Alexander David Johnson, *Overland Park*
Joseph Michael Langr, *Lyndon*
James Luke Lawson, *Goddard*
Taishan Li, *Jingzhou, China*
Derek James Lingo, *Tonganoxie*
Linzhen Luo, *Shiyan, China*
Daniel Richard Miller, *Shawnee*
Gregory Thomas Moats, *St. Marys*
Paul William Naab, *Emporia*
Sunny N Patel, *Oakley*
Jesus Orlando Rangel Roberti, *Caracas, Venezuela*
Timothy Scott Sample, *Olathe*
Aaron William Streit, *Independence, Mo.*
Danielle Lynette Suppes, *Great Bend*
Luke Alexander Terrell, *Overland Park*
Adam James Treece, *Bixby, Okla.*
John Bradley Trinkl, *Olathe*
Logan Tate Van Horn, *Garfield*
Joshua Adam Welch, *Garden City*
Logan Marshall Whitmore, *St. Francis*
Bo Zhang, *Zhangjiakou, China*

M.S. and Ph.D. graduates

May 2017

Edward Avery Ashby
Ryan David Dardick
Ethan Mark Grother
Riley Thomas Harrington
Michael Langford
Tianyu Lin
Wenda Liu
Fatehullah Nassery
Nicholas Michael Oberski
Chintan Arunkumar Raval
Todd William Rider
Kyle Dean Rogge
Saeead Saud M. Saeead
Laura J. Tolle
Te Xu

Mohammad Nazif Faqiry – Das (Ph.D.)
Dissertation: *Efficient Double-Auction Mechanisms in the Energy Grid with Connected and Islanded Microgrids*

Akanksha Singh – Mirafzal (Ph.D.)
Dissertation: *A Boost-Current Source, Inverter-Based Generator-Converter Topology for Direct-Drive Wind Turbines*

B.S. graduates

May 2017

Khaled Abdullah Alfailakawi, *Kuwait City, Kuwait*
Murtada Adel Alsaid Al, *Qatif, Saudi Arabia*
Tanner Lee Armstrong, *Topeka*
Brendan Michael Bonavia, *Topeka*
Broden Alan Bowell, *Salina*
Justin Brickey, *Manhattan*
Muhammad Ibrahim Butt, *Dubia, United Arab Emirates*
Nolan Patrick Casimir, *Newton*
Dustin Earl Chew, *Plainville*
Daniel H. Clausing, *Lawrence*
Whitney Rae Cox, *Olathe*
Levi Mathias Eck, *Andale*
Lawyrn Edmonds, *Valley Falls*
Dalton Jay Graber, *Berryton*
Alex Scott Hamilton, *Topeka*
Michael Joseph Hotujac, *Overland Park*
Brandon Edward James, *Lenexa*
Peter Lemoine Jensen, *Lenexa*
Andrew Dale Johnson, *Wichita*
Nasser Mulaa Juma, *Manhattan*
Ethan Koch, *Baileyville*
Joshua Thomas Langford, *Littleton, Colo.*
James Douglas Lightner, *Olathe*
Eleazar Lopez, *Dodge City*
Harrison Kevin Manase, *Antananarivo, Madagascar*
Blake Steven Martin, *Lenexa*
Myra Lynn McLenon, *Merriam*
Karan Mehra, *Overland Park*
Grant Allen Meyerhoff, *Wichita*
Jacob Joseph Miles, *Overland Park*
Matthew Ryan Moran, *Lenexa*
Dishan Anupama Nahitiya, *Manhattan*
Elkana Kiboma Nyambergera, *Topeka*
Michael Rhett Pepper, *Holcomb*
Meng Rao, *Nanjing, China*
Matthew Wayne Sanner, *Gardner*
John Westthroppe Shaver, *Olathe*
Kelsi Rae Sheeley, *Effingham*
Abdullateef Akolade Shodunke, *Sabo, Nigeria*
Jacob Aaron Slous, *Wichita*
Blake Charles Smethers, *Olathe*
Jacob L. Sowers, *Cummings*
Dylan Thomas Stidham, *Lawrence*
Luke John Waliser, *St. Marys*
Li Wang, *Dalian, China*
Earl Richard Watkins, *Hutchinson*
Thomas A. Woodward, *Highland Ranch, Colo.*
Tyler Michael Wright, *Hutchinson*
Tianlu Wu, *Wuxi, China*
Hang Zhang, *Luoyang, China*
Hangyu Zhang, *Chengdu, China*

IN MEMORIUM

Justin Keith Brickey
Jan. 16, 1984 – July 5, 2016
Class of 2017

Justin Brickey served in Iraq and achieved the Iraq Campaign Medal with two campaign stars, Army Commendation Medal, Combat Infantry Badge, as well as many other decorations and medals. He was honorably discharged after eight years of service in the U.S. Army. He was a senior in the engineering program at K-State, and a part of the Engineering Club, and Iraqi and Afghanistan Veteran's Clubs. In his free time, he enjoyed playing banjo, saxophone and guitar, and loved spending time outdoors. His '73 Volkswagen Bug was his pride and joy. Brickey's family accepted his posthumous diploma at the May 2017 commencement ceremony.

WHAT HAVE YOU BEEN UP TO?

We would like to feature alumni news in future issues of ECE Uplink. Please send an email to *alumninews@ece.ksu.edu* with your latest news and accomplishments.

HIGH-ALTITUDE BALLOONING PROJECT

During the spring semester, students in the electronics design club developed a project to expand the normal curriculum by offering a wide range of experiences that would be useful once they have completed their degrees.

Working with a high-altitude balloon, also called the space balloon, challenged students by allowing them to apply core curriculum — programming and data retrieval of natural phenomenon; PCB board design, fabrication and testing; and mechanical structuring and physical operations — to a more advanced project, and thus design a project from concept to product to field testing.

ELECTRONICS DESIGN CLUB MEMBERS PREPARE FOR LAUNCH — 3, 2, 1 ….

The goal of the high-altitude balloon project was to build a fully functional payload system that would take in atmospheric data, save that data and then manage to communicate with ground control for retrieval of that data. This promoted the challenging engineering task of sending equipment to a height of 20 miles above the earth's surface, requiring several considerations in design and testing be taken before the launch date.

The team of eight launched the balloon this past spring with the intention of following it using an automatic packaging report system that sends received latitude and longitude coordinates to on-the-ground towers already in place. Data is received and logged so the balloon can be tracked. Unfortunately, the team lost communication with the balloon, so data could not be retrieved. Other researchers that have launched similar balloons have found them up to a year later. The team expects to improve on this project and launch another balloon next year.

Meanwhile, those who live in Eastern Kansas, or who may be passing through the Lawrence area anytime soon, are asked to be on the lookout for a bright orange parachute attached to a Styrofoam cube. Contact information is posted on the side of the cube, and team members would love to have the equipment back and be able to release the footage. They would also appreciate anyone spreading the word about their sighting and recovery request.

SUCCESSFUL BALLOON LAUNCH — MARCH 11

STUDENTS TOUR WIND FARM

ECE students recently had the unique opportunity to visit Westar Energy's Spearville, Kansas, wind farm. Though it is still under construction, students were able to see the process of installing and setting up a complex energy system.

The tour included a visit to the interconnect substation that connects the wind farm to the electric grid. This wind farm will add 120 Siemens 2.3-MW turbines that will add a total of 280 MW of power to the grid. Construction of the farm began in April and weather permitting, all turbines should be in place by Nov. 18. Once all the turbines are in place, they will be connected to the grid, pending FERC compliance.

Students were able to climb into the nacelle to see the motor/gearbox and the hub where the three 180-foot blades are attached. The visit was sponsored by the Electrical Power Affiliates Program, whose members include Black & Veatch, Burns & McDonnell, Kansas Electrical Cooperatives, Sega Inc. and Westar Energy.

OPEN HOUSE 2017

The 2017 Engineering Open House kicked off Friday, March 31 for engineering students, following this year's theme of "Engineered to Inspire." The ECE departmental theme was "Mar's Landing — To Infinity and Beyond." Students adapted this theme and performed an original skit starring a spaceman, Tanner Weins, landing on Mars and saving a group of partying Martians — main Martian, Zach Darpinian — by fixing their boom box with his electrical engineering skills (photo left).

April 1 launched the All-University Open House and ECE answered the call with dynamic, interactive, creative displays designed and built by its students. For the departmental display, a team of 20 students developed and launched a high-altitude weather balloon.

Harold Vilander, junior in computer engineering, received the Department's Choice Award for Best Open House Project for his 2.4-GHz power detector (photo right).

LEFT, FUTURE WILDCATS ENJOY ECE'S L.E.D. WALL. ABOVE, OPEN HOUSE VISITORS POSE WITH "ASTRONAUT," JORDAN DISBERGER, IN PHOTO BOOTH DISPLAY BUILT BY ECE STUDENTS.

UNDERGRADUATE NEWS

Corey Gaither, ECE, has been awarded the 2017-2018 Engineering Undergraduate Research Experience Award for $5,000.

Andrew McKittrick, ECE, has been selected to the Mortar Board Senior Honor Society at K-State for the 2017-2018 school year.

Damian Loya, ECE, has been inducted into the College of Engineering Steel Ring Honor Society.

UNDERGRADUATE POSTER COMPETITION HIGHLIGHTS ENGINEERING RESEARCH

The following ECE students received awards at the 2017 Engineering Undergraduate Research Poster Competition April 27 in the Engineering Complex atrium:

Undergraduate research category

- **Daniel Clausing**, first place, $500 award; research adviser: Punit Prakash, ECE assistant professor
- **Whitney Cox**, third place, $100 award; research adviser: Punit Prakash, ECE assistant professor

Design/build/team/class project research category

- **Adam Claassen**, third place, $100 award; team adviser, Walter McNeil, MNE assistant professor

KANSAS ENTREPRENEURSHIP CHALLENGE AWARDS STUDENT ENTREPRENEURS

The team of **Tyler O'Briant** and **Sam Rozell**, both EE, placed fourth in the recent Kansas Entrepreneurship Challenge with their pitch for Eyas, a drone system designed for use by law enforcement and emergency management personnel.

UNDERGRADUATE STUDENT AWARDS

Outstanding seniors ($400)

Outstanding Academic Achievement

Fall 2016: **Valerie Binns**

Spring 2017: **Dalton Graber**, **Alex Hamilton** and **Grant Meyerhoff**

GRADUATE STUDENT NEWS

Robert I-Jen and Sophia Shui-Kan Jung Graduate Scholarship in Engineering for Returning Students

- **Qihui Yang**, ECE Ph.D. student
- **Wenji Zhang**, ECE Ph.D. student

Md Riad, ECE, is a Notable Scholarly Graduate Student for his published work "An individual-level network model for a hypothetical outbreak of Japanese encephalitis in the USA."

GRADUATE STUDENT COUNCIL RECOGNIZES GRADUATE STUDENT AWARDS AND ACCOMPLISHMENTS

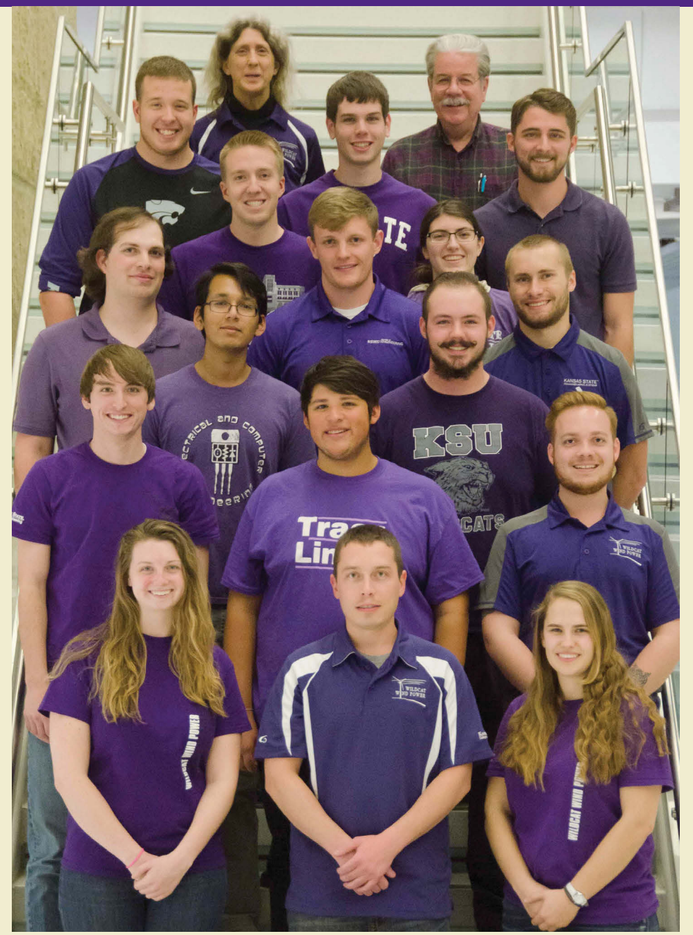
The Graduate Student Council recognized 150 graduate students for their many scholarly accomplishments and awards from the 2016-2017 academic year at the 2017 K-State Graduate Student Awards and Recognition Reception on April 24.

Austin Pfannenstiel, ECE, was recognized as one of the College of Engineering's Outstanding Graduate Students.

ELECTRICAL AND COMPUTER ENGINEERING

Know someone interested in attending Kansas State University and majoring in electrical and computer engineering? Show them our new recruitment videos at www.ece.k-state.edu, or go to youtube.com/watch?v=qurQ8unJU48 and youtube.com/watch?v=hxjh_FT9o_I.

K-STATE TEAM BREEZES TO HIGH FINISH IN *WIND TURBINE COMPETITION*



Kansas State University's Wildcat Wind Power team stormed the competition and came away with second place in the 2017 Engineering Challenge of the Collegiate Wind Competition.

The event, April 20-22 at the National Wind Technology Center near Boulder, Colorado, featured teams from 10 of the universities that participated in the U.S. Department of Energy's 2016 Collegiate Wind Competition.

For the technical challenge, teams were focused on testing a small-scale wind turbine in a wind tunnel with the additional challenge of testing a turbine in yawed inflow. To participate, teams had to design and build a turbine that is able to yaw, which allows the turbine to adjust to changing wind directions; that is safe, reliable and effective; and that uses sound electrical, mechanical and aerodynamic practices. The turbine also had to feature a load system that could match the power being generated.

The team prepared for the challenge during the school year by building and improving a wind tunnel for testing its turbine, and developing a computer-controlled data acquisition system. The mechanical engineering students tried new techniques for blade-building, and the electrical engineering students enhanced electronics and controls, said Ruth Douglas Miller, associate professor of electrical and computer engineering. Douglas Miller and Warren White, associate professor of mechanical and nuclear engineering, are faculty advisers to the team.

The second-place finish provides great momentum, White and Douglas Miller said, as Kansas State University has been selected to participate in the 2018 Collegiate Wind Competition, May 7-10, 2018. The competition will feature 12 teams.

Department of Electrical and Computer Engineering

HONOR ROLL OF GIVING

July 1, 2016 – June 30, 2017

INDIVIDUALS

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Richard and Setsuko Reeves

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$10,000 – $49,000

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Gary and Catherine Hughes

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Mitch and Molly Snyder

$5,000 – $9,999

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$1,000 – $4,999

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Lionel and Debra D'Luna
Leslie and Justin Gordon
Kay Hummels
Steve and Mary Jane Kirkwood
Don Lenhert
Jane Ley
Ben-Huang and Ing Lin
Robert and Barbara Moyer
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Jeanette Otto
Terry and Marian Parsons
Junius Penny
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Julie and Daniel Rembold
Gabe Thompson
Richard Voigt
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$500 – $999

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** = deceased*

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Interested in supporting the K-State electrical and computer engineering department? Learn more at ***www.found.ksu.edu/give/ece***.

We sincerely thank you all for your generosity and support.

Every effort has been made to produce a comprehensive listing of donors for the calendar year July 1, 2016, to June 30, 2017. We apologize for any incorrect listings, misspellings or omissions, and extend our sincere thanks for your support. Questions about the donor list should be directed to Brett Larson, Senior Director of Development, College of Engineering, Kansas State University Foundation, 1800 Kimball Ave., Suite 200, Manhattan, KS 66502; 785-532-7519 or 800-432-1578.

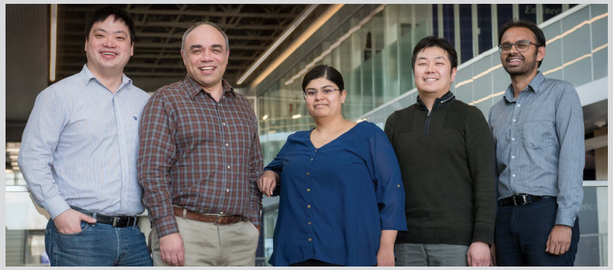
COLLEGE OF ENGINEERING AWARDS SIX KEYSTONE RESEARCH SCHOLARS

The impact of faculty research plays a major role in establishing the reputation of a college and university.

This belief propelled the College of Engineering at Kansas State University to establish the Keystone Research Scholars Program to recruit and retain top scholars, who though in the early stages of their academic careers, are in high demand for faculty positions throughout the country.

"By providing targeted funding for these early-career faculty members to pursue groundbreaking research," said Darren Dawson, dean of the College of Engineering, "we are enabling these talented men and women to join our college and take their intellectual pursuits to the highest levels of achievement here."

Based on previous records of outstanding research accomplishment, faculty members are nominated by their department head for these positions. Each Keystone Research Scholar receives a three-year appointment with a salary increase and discretionary funds to support travel, specialized equipment and additional graduate students to join his or her research team.



FROM LEFT, HONGYU WU, BEHROOZ MIRAFZAL, PAVITHRA PRABHAKAR, JUNGKWUN KIM AND PUNIT PRAKASH; NOT PICTURED, EUGENE VASSERMAN

Funded by a gift from Michelle Munson, 1996 electrical engineering graduate, and her husband, Serban Simu, the following six recipients have been named as Michelle Munson-Serban Simu Keystone Research Faculty Scholars:

Pavithra Prabhakar, assistant professor, and Eugene Vasserman, associate professor, both computer science; and Jungkwun Kim, assistant professor, Behrooz Mirafzal, associate professor, Punit Prakash, assistant professor and Hongyu Wu, assistant professor, all electrical and computer engineering.

"This type of support for our early-career professors is precisely what we need to compete for the best and brightest faculty members," said Darren Dawson, dean of the College of Engineering. "We are extremely appreciative that Michelle and Serban have chosen this manner of investment in our programs."

KANSAS STATE UNIVERSITY

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ADVISORY COUNCIL

Members of the electrical and computer engineering advisory council met in October 2016 to align with the engineering college advisory council meeting.

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