

SUMMER 2015



Colorado State University

A revolution is happening in the ECE department. We are one of six schools selected by the National Science Foundation to lead scalable and sustainable change in engineering and computer science education for the nation.



Armed with a \$2 million, five-year grant, we are tackling the fundamental failures of the current engineering educational system. We aim to reverse the unacceptable retention trend and overcome the barriers that prevent engineering graduates from feeling fully prepared for the challenges of the profession.

Our new model redefines what it means to both teach and learn in the ECE department. Rather than teaching courses in isolation, multifaceted faculty teams will approach the degree as an integrated system. Using familiar applications such as the smartphone, the teams will work to hook students' interest earlier by helping them see how concepts connect across the curriculum and how that knowledge relates to the real world of engineering.

We will share the nuts and bolts of our plan in the months ahead. Our work will undoubtedly lead to new opportunities to partner with the engineering community to extend our work beyond the Oval to institutions across the country. I hope you will join us in revolutionizing engineering education.

ECE Proudly Announces Lisa and Desi Rhoden College Professorship in Electrical and Computer Engineering



Left to right: ECE Department Head Tony Maciejewski and Professor Carmen Menoni connect with alumni Lisa and Desi Rhoden at the 1870 Dinner.

The Department of Electrical and Computer Engineering is delighted to unveil its first-ever endowed professorship, The Lisa and Desi Rhoden College Professorship in Electrical and Computer Engineering. The named professorship provides support to a gifted faculty member to ensure high-quality instruction, research, and outreach, as well as salary or tuition funding for motivated students.

"I can't begin to express my appreciation for the Rhodens' unprecedented support," said ECE Department Head Tony Maciejewski. "The professorship is an invaluable incentive to attract and retain exceptional faculty and foster student success."

Supporting Excellence in Engineering Education

ECE alumni Lisa (B.S., '84) and Desi (B.S., '83; M.S., '84) Rhoden are passionate about engineering education. The Rhodens, who met at CSU while taking electrical engineering course work, learned how to think like engineers from

legendary teachers such as Drs. Aram Budak and Paul Wilbur. The couple established the professorship because they want to give back to CSU and empower others with the gift of knowledge.

"Our electrical engineering education is the foundation of our life successes," said Lisa and Desi Rhoden. "We want to support excellence in the classroom to ensure transformative learning experiences for future generations."

The couple said they hope their investment will inspire current and future alumni to join them in supporting the future of engineering education. The first recipient of the Lisa and Desi Rhoden College Professorship in Electrical and Computer Engineering will be announced later this year.

About Lisa and Desi Rhoden

Lisa Rhoden is a respected industry organizer and manager leading teams of software, firmware, and hardware engineers around the world. Lisa received her M.B.A. from Arizona State University in 1999 and

currently serves as president of the Universal Flash Storage Association and executive director of the MobileBench Consortium.

Desi Rhoden is an esteemed veteran in the semiconductor industry, with more than 30 years of experience in a broad range of areas, including memory and high-performance systems. The executive vice president at Montage Technology, Desi also provides consulting and expert services on patent and standards issues. He also is chairman of the Memory Committee and the past chairman of the board for JEDEC, the world leader in standards and technology development for the semiconductor industry. The Rhodens reside in Austin, Texas.

Notaros Recognized as One of the Best Teachers in the World

While ECE Professor Branislav Notaros has always made the grade with his students, the decorated professor is gaining high-profile recognition outside the University for his contributions to educational scholarship and innovation.

In June, Notaros was selected for the 2015 ECE Distinguished Educator Award from the American Society for Engineering Education. Earlier this year, he was chosen by the IEEE – the world's largest professional association with nearly half a million members – as the sole recipient of its Undergraduate Teaching Award. Notaros was also honored last November as the

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Carnegie Foundation and CASE Colorado Professor of the Year.

"I continue to be impressed with Professor Notaros and the honor he brings to CSU. He has made a name for himself as one of the best educators in the world," said ECE Department Head Tony Maciejewski. "We deeply value his contributions and commitment to our students."

Notaros joined Colorado State in 2006, bringing with him new approaches to teaching and learning about electromagnetic fields. Few, if any, courses are considered harder to take – and teach – than those on electromagnetic fields. Despite the difficult subject matter, Notaros is hugely popular among the student body, and students attribute Notaros' effectiveness to his enthusiasm for electromagnetics and a teaching style that mixes humor and high expectations.

Alumnus Aaron Kim, B.S.E.E., '10, shared his experience in Notaros' electromagnetics course. "To this day, I remember fondly the adventures of that class. Professor Notaros quite simply infected us with his enthusiasm for electromagnetics. ... His ability to take such a frustratingly difficult, and not to mention dry, subject and transform it into a lively and intensely intriguing learning experience is unparalleled," said Kim.

Notaros' teaching expertise and initiatives are fully integrated with his research, as well as his service to the University and the profession. He was recipient of the IEEE Microwave Prize and IEE Marconi Premium for his research

in electromagnetics. With 20 years of teaching experience, he currently serves as the director of the Electromagnetics Laboratory at Colorado State University. Prior to joining CSU, he held faculty appointments at the University of Belgrade and the University of Massachusetts, Dartmouth.

Notaros' Teaching Honors in Last Five Years

2015 Undergraduate Teaching Award (IEEE)

2015 ECE Distinguished Educator Award (ASEE)

2014 Colorado Professor of the Year (Carnegie Foundation & CASE)

2013 Provost's N. Preston Davis Award for Instructional Innovation (CSU)

2012 Board of Governors Excellence in Undergraduate Teaching Award (CSU)

2012 Outstanding Engineering Educator (IEEE Region 5)

2010 Abell Outstanding Teaching and Service Faculty Award (CSU College of Engineering)



Professor Notaros teaching electromagnetics.



ECE Team Revved to Compete in EcoCAR 3

Colorado State engineering students are in the driver's seat of an exciting project to create the ultimate energy-efficient, high-performance vehicle. A partnership between the ECE department and mechanical engineering, the team is competing in EcoCAR 3, a multiyear engineering competition that challenges participants across the country to reduce the environmental impact of transportation.

With more than 300 applicants for EcoCAR 3, Colorado State was one of 16 universities selected for the national competition, which is sponsored by the U.S. Department of Energy and General Motors. The CSU team will work to convert a Chevrolet Camaro into a hybrid electric car that gets better gas mileage and emits fewer greenhouse gases but still maintains the performance and safety of the iconic American muscle car.

ECE Associate Professor Sudeep Pasricha is advising undergraduate and graduate students on the controller design and the advanced driver assistance system of the car, supporting features such as pedestrian tracking, lane tracking, and automatic parking.

"Electrical and computer engineering touches nearly every facet of modern life, and this project is a great example of the important role our discipline plays in the future of the automotive industry," said Pasricha. "Electronics and embedded systems are becoming one of the biggest innovations in emerging automotive products. It is pretty exciting for our students to play a role in advancing the technologies."

Over the next 3½ years, Pasricha and his students will work closely with their partners in mechanical engineering, led by Associate Professor Thomas Bradley, to develop and incorporate their innovative ideas. Following the EcoCAR Vehicle Development Process, they will establish a plan for research and development, analysis, and validation of the vehicle design.

Launched in September 2014 and concluding in 2018, EcoCAR 3 succeeds EcoCAR 2: Plugging In to the Future, and features more than a dozen government and industry sponsors. Follow the Colorado State EcoCAR 3 team on Facebook: www.facebook.com/CSUEcoCAR3.



ECE students with EcoCAR 3.

ECE Student-Athlete Wins Mountain West Decathlon



Josh Cogdill

ECE Junior Josh Cogdill is all about grit. In addition to earning high marks in his rigorous course work, the star student-athlete recently won the men's decathlon at the Mountain West Championship. Cogdill, a computer engineering major from Longmont, Colo., topped the field in the 100-meter dash, long jump, and discus.

All-Around Student and Athlete

Supported by both athletic and academic scholarships, Cogdill is fast, strong, and ready for life's hurdles.

"Everyone said it would be hard to major in engineering and compete in sports," said Cogdill. "But I like the challenging material, and I have a love for track and field. If you have a passion, you'll put in the time."

Cogdill balances his demands with a busy routine that includes twice-a-day workouts, a full schedule of ECE classes, and hours of studying in the evenings.

Having excelled in math and science in high school, Cogdill knew he wanted to pursue engineering. And it runs in the family. His father and brother, Craig (B.S., computer engineering, '14), are engineers.

Cogdill's ultimate goal is to become an All-American, which honors the top track and field athletes in the nation. This year, he was only a few spots away from making the elite group.



Michael Habel

Michael Habel Memorial Scholarship Established to Honor Former Student

The ECE department and the Robert Habel family have created a new scholarship to honor Michael Habel, a first-generation electrical engineering student who was 21 when he passed away unexpectedly on June 5, 2014, at his family's cabin in Walden, Colo. Habel was known for being a committed student with a real passion for engineering, and his love for electronics was evident in everything he did. Habel would create his own circuit boards and program them to a customized Christmas light show every year, donating the proceeds to several nonprofit organizations.

"Michael thrived in and out of the classroom," said Tony Maciejewski, head of the CSU Department of Electrical and Computer Engineering. "He inspired others through his creativity, and he used his knowledge to make the world a better place. We are proud to establish a scholarship that will honor him for years to come."

Give online to the scholarship at advancing.colostate.edu/MICHAELHABEL, or contact Andrea Leland for more information (andrea.leland@colostate.edu or (970) 491-1033).



Spotlight: Marching Band Strikes a Chord with Engineering Student

Maddi Repasky, a sophomore pursuing a dual degree in biomedical engineering and electrical engineering, loves to give her brain a workout. When she's not immersed in engineering homework, Repasky is supporting CSU teams and entertaining audiences with her tenor saxophone as part of the Colorado State Marching Band.

"Playing the saxophone is like engineering in many ways," said Repasky. "It takes creativity and critical thinking skills to read, interpret, and play the music."

Raised in Fort Collins in a family of electrical engineers, Repasky excels in the classroom and enjoys the breadth and challenge of the curriculum. But she believes in balance and diversity in her college experience. "My major is pretty demanding," said Repasky. "The marching band is my social outlet and stress release."

Repasky joins more than 240 band members – including her younger sister, Micki – in pep rallies, parades, and football games throughout the fall semester. In her free time, Repasky likes rock climbing and spending time with her family. In the long term, Repasky, who is interning at Intel Corporation this summer, sees herself working for a company that challenges her while providing a broad range of opportunities to make a positive impact.



Sophomore Maddi Repasky (left)

2014-2015 SCHOLARSHIP RECIPIENTS

ECE SCHOLARSHIPS

ARAM BUDAK ECE FELLOWSHIP

Carsten Dietvorst
Joel Kraft
Dylan McNamara
Jordan Tunnell

CHRIS KAUTZ MEMORIAL SCHOLARSHIP

Kaden Strand

EADS FAMILY SCHOLARSHIP

Kathleen Cunningham
Tinnamon Landrey

ELECTRICAL AND COMPUTER ENGINEERING SCHOLARSHIP

Aaron Smull
Rachael Sutton

FRY FAMILY SCHOLARSHIP

Jason Gardner
James Kimbrough
Olivia Trinko

LEE AND BETTE WEHRMAN SCHOLARSHIP

Josh Cogdill
Ben Jenkins
James Kahler
Rob Kahler
Joel Kraft
Dylan Machovec

PERL FAMILY GRADUATE FELLOWSHIP

Craig Cogdill
Jeff Nguyen

THOMAS A. BRUBAKER SCHOLARSHIP

Ed Okvath

WILLIS T. JOHNSON MEMORIAL SCHOLARSHIP

Beau Browning



Dan Malyszko, director of operations, Malisko Engineering



Stephen Malyszko, CEO and president, Malisko Engineering

Alumnus Leads Malisko Engineering to “Systems Integrator of the Year”

Malisko Engineering, a company co-founded by electrical engineering alumnus Stephen Malyszko (B.S.E.E., with honors, '75; M.S.E.E., '77), was named the 2015 Systems Integrator of the Year by *Control Engineering*, a leading trade publication and website in the global control, instrumentation, and automation marketplace.

Each year, a panel of *Control Engineering* editors and industry experts select the winners based on business skills, technical competence, and customer satisfaction. Malisko Engineering was the 2015 winner of the small integrator category.

Malyszko is the president and CEO of Malisko Engineering, which designs and implements automated production systems. His son, Dan Malyszko (B.S.E.E., '02), is the director of operations for the company's Denver office.

ECE Community Honors Professor Emeritus Wilmsen

Eighty ECE alumni, faculty, staff, and friends returned to campus on May 9 to celebrate the lifetime achievements of Professor Emeritus Carl Wilmsen. Attendees traveled from all over the U.S. for the opportunity to reconnect and thank Professor Wilmsen for his personal and professional contributions.

“I was overwhelmed and touched,” said Wilmsen. “I really enjoyed visiting with former students and faculty.”

The three-hour event included an intimate dinner with brief remarks from alumni who credited Wilmsen for their successes. Wilmsen, who retired in 2003, served as a professor in the department for 37 years. He was department head from 1982 to 1987.

Visit the ECE web site to view a photo gallery from the event: <http://www.engr.colostate.edu/ece/wilmsen/wilmsen.php>.



Carl Wilmsen (right) enjoyed connecting with alumni on May 9.

Give to the Carl Wilmsen ECE Scholarship

Honor the legacy of Professor Emeritus Wilmsen by making a gift to the Carl Wilmsen ECE Scholarship. Please complete the enclosed form and submit your gift in the paid return envelope. You may also give online: <https://advancing.colostate.edu/CARLWILMSEN>.

Class Notes

If you would like to share your professional and personal updates, please contact the ECE department at ece@engr.colostate.edu. Your updates will be published in the next ECE newsletter.

Raul Pettai (B.S.E.E., '53) cannot complain, despite his age of 86, except for lower energy levels. Long trips are out, but he enjoys tons of interesting books about science, art, history, and current events. He still cherishes his days at CSU (then Colorado A&M) and sends his best regards to all Aggies!

Adnan Mian (B.S.E.E., '95) is a Ph.D. student in telecommunications at the University of Colorado Boulder. Prior to that, he completed his professional degree in electrical engineering at Columbia University in New York, and a Master of Science in telecommunications at CU.

Chris Everson (B.S.E.E., '03) is a digital design manager for Texas Instruments in Dallas, Texas. He completed his master's in electrical engineering at the University of Texas at Austin in 2006. He has

been married to Terese Everson, a finance professional, for six years. They welcomed a son, Levi, in April 2014.

Josh Walker (B.S.E.E., '03) returned to Colorado and works at Webroot as a software engineer for sophisticated anti-malware/anti-virus products. Walker reports, “My ECE degree has paid off a great deal so far in this role.”

Nick Roseveare (B.S.E.E., '05; M.S.E.E., '07) moved back to Colorado in October 2014 and is working for Innovative Signal Analysis doing research and analysis. He would love to get back together with former classmates: master's students Mike, Derek, Bryan, Neil, Jered, Gordon, and Amanda, as well as bachelor's students Walter, Eli, Bryce, and Justin. Contact Roseveare if you are interested in reconnecting: nroseveare@alumni.colostate.edu.

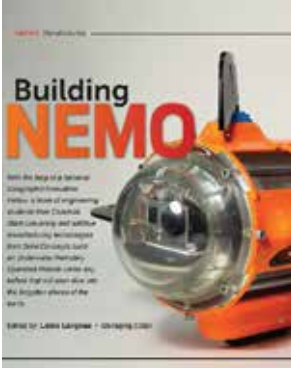
J. Derek Tucker (B.S.E.E., '07; M.S.E.E., '09) completed his Ph.D. in statistics at Florida State University in May 2014. For the last five years, he has worked as a research

engineer at the Naval Surface Warfare Center in Panama City, Fla. He recently accepted a senior research position at Sandia National Laboratories in Albuquerque, N.M., where his research will focus on statistical analysis and modeling of radar signals.

Jason Fritz (Ph.D.E.E., '10) has accepted a position as a research engineer at Rincon Research Corporation in Denver. Outside of work, his 5-year-old triplets keep him busy (below).



Five-year-old Fritz triplets



2013 NEMO Project Still in Spotlight

A team of ECE alumni continues to be recognized for its 2013 design project, NEMO, an underwater remotely operated vehicle that will allow cave divers to go where no man, or robot, has gone before. Designed and constructed at Colorado State in collaboration with Corey Jaskolski, president of Hydro Technologies and a National Geographic Innovation Fellow, the hugely successful project was featured in the December Issue of *Design World*, a premier print and online trade publication for design engineering.

Winners of the 2013 Best Paper Award and voted Best Project by CSU undergrads, the NEMO team included ECE alumni Rachel Dondero, Sarah Romer, and Justin Kopacz, along with mechanical engineering alumni Luke Stahler and Michael Hake.

Looking forward, Hydro Technologies aims to test NEMO in the unexplored high-altitude lakes of Colorado.



Update:

ECE alumnus Kent Geib, B.S.E.E., '77, recognized three former graduate students from an optical computing retreat, a joint event with CU-Boulder, at Pingree Park Mountain Campus. From left to right: Dong-Yau (Louis) Lin, M.S.E.E., '84; Ravi Iyere, and Chen-Wei Chen.



Can You Identify This Alumnus?

Can you identify the alumnus in this photo (or do you recognize yourself)? Another example of the intersection of engineering and music, the photo was taken in 1995, when the department had its own musical ensemble. Contact the ECE department at (970) 491-6600 or ece@engr.colostate.edu, and we will run an update in the next issue.



ECE Revamps Web Site

The ECE department recently overhauled its web site with a new look and feel and fresh content: www.engr.colostate.edu/ece. From videos about undergraduate projects to stories that highlight innovative research, check out the new site to learn what's happening in the department.

New Academic Advisor Joins ECE

When Courtney Johnsrud, the ECE department's new academic advisor, is conducting one of her many advising sessions, there is no question she is in her element. Johnsrud joined the department last fall and already has forged strong relationships with the student population, as well as the faculty.

"I like working with such a wide range of students as they pursue their academic and career goals," said Johnsrud. "I have also enjoyed getting to know and work with the faculty in the department."

In her new role, Johnsrud works closely with students to help guide their academic experience and provide resources to empower their success. She also collaborates with the ECE undergraduate and graduate committees on curricular initiatives.

Johnsrud comes to Colorado State from Great Falls College Montana State University, where she served as the director of the Advising and Career Center. Johnsrud earned her Master of Education in counselor



Courtney Johnsrud

education from Montana State University – Northern. She is a licensed professional counselor in the state of Colorado and a nationally certified counselor.

In her free time, Johnsrud likes cross-country skiing, reading, and traveling. Since moving to Fort Collins, she has enjoyed exploring the local food and entertainment scene.

This newsletter is produced by the Department of Electrical and Computer Engineering. Please send story ideas and comments to:

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ECE alumni Thaddeus Johnson (B.S.E.E., '13; M.S.E.E., '14) and Torie Hadel (B.S.E.E., '13; M.S.E.E., '14) work on the HAMMR (High-frequency Airborne Microwave and Millimeter-wave Radiometer) instrument. Johnson and Hadel helped prepare and integrate the instrument for its first engineering flights in July 2014.

Research Spotlight: ECE Professor Leads \$4.5M Grant to Help NASA Study Clouds and Climate

ECE Professor Steven Reising is leading a research team to develop a new radiometer for NASA to study ice particles in clouds and humidity in the upper levels of the Earth's atmosphere and to provide useful information to improve global climate models.

Designed to fit into a CubeSat weighing just over 17 pounds, the Tropospheric Water and Cloud ICE will be available for NASA to launch as an auxiliary payload on larger satellite missions. Once in orbit, TWICE will scan the atmosphere at 16 frequencies to measure the size of ice particles in clouds at different times of day as well as water vapor in most of the troposphere in nearly all weather conditions.

Dust, smoke from fires, and air pollution can influence the size of ice particles in clouds. When large amounts of these pollutants are present, clouds form smaller ice particles, resulting in less rain. "There is a lot of uncertainty about the effects of air pollution on clouds and climate," said Reising. "Our main goal is to reduce this uncertainty to help improve climate predictions."

The total NASA grant is for \$4.5 million. As principal investigator, Reising leads the development of TWICE, including Colorado State students and postdocs as well as researchers from NASA's Jet Propulsion Laboratory and Northrop Grumman. TWICE is expected to be completed in 2018.

Professor Sid Named Outstanding Young Engineer by IEEE Power and Energy Society

ECE Associate Professor Siddharth Suryanarayanan, or "Professor Sid," has been selected by the Institute of Electrical and Electronics Engineers Power and Energy Society as the 2015 recipient of the Outstanding Young Engineer Award.

The award, which comes with a \$2,000 scholarship fund for the department, recognizes PES members 35 years of age or younger for outstanding contributions in the leadership of technical society activities and evidence of technical competence through significant engineering achievements.

Meet ECE's Newest Professor: Jade Morton



Jade Morton

Dr. Yu (Jade) Morton joined the ECE faculty last fall as a professor of electrical engineering. Despite being new to the department, Morton has not missed a beat. In addition to leading a thriving research program, she recently garnered two Fellow awards. She was named a Fellow of the Institute of Navigation for her contributions to Global Navigation Satellite System software receivers and the development of a worldwide network of space weather monitoring stations. She was also named a Fellow of the Institute of Electrical and Electronics Engineers earlier this year for her contributions to the understanding of ionospheric effects on global navigation satellite signals.

"We are delighted to have Professor Morton on our faculty," said ECE Department Head Tony Maciejewski. "Not only is she a highly regarded teacher and scholar, she also exudes passion and enthusiasm for her work. I know that our students will benefit from her talent and energy."

Morton comes to CSU from the ECE department at Miami University in Ohio, where she played an instrumental role in establishing their ECE department and mentored hundreds of students.

Morton's research interests are in advanced Global Positioning System receiver algorithms for accurate and reliable operations in challenging environments; studies of the atmosphere using radar and satellite signals; and development of new applications using satellite navigation technologies. During the past decade, Professor Morton's research contributed to the understanding of space weather phenomena and its effect on Global Navigation Satellite System signals and advancement of satellite navigation technology.

In addition to her recent Fellow awards, Morton has published more than 150 technical papers and won seven best paper awards. She has chaired a number of international conferences and has served on technical publication boards and professional society committees, including serving as chair of the Institute of Navigation Satellite Division.

Morton received a Ph.D. in electrical engineering from Pennsylvania State University and was a post-doctoral research fellow at the Space Physics Research Laboratory at the University of Michigan.



Sid Suryanarayanan

Two More ECE Faculty Named University Distinguished Professors

Two ECE faculty members were recognized by Colorado State in 2014 as University Distinguished Professors. Both alumni of CSU, Professors Carmen Menoni (Ph.D., physics, '87) and V. "Chandra" Chandrasekar (M.S.E.E., '83; Ph.D.E.E., '87) were honored for their extraordinary contributions within their disciplines. With no other departments on campus boasting a higher number of UDPs, the recognition advances the research quality and reputation of the University overall.

Bestowed upon a very small number of full professors at any one time on the basis of outstanding scholarship and achievement, UDPs hold the distinction for the duration of their association with Colorado State University. ECE Professor Jorge Rocca, also a CSU alumnus (Ph.D.E.E., '83), was elevated to UDP in 2007.



CSU President Tony Frank and
UDP Carmen Menoni



UDP V. "Chandra" Chandrasekar

About ECE's University Distinguished Professors

Carmen Menoni

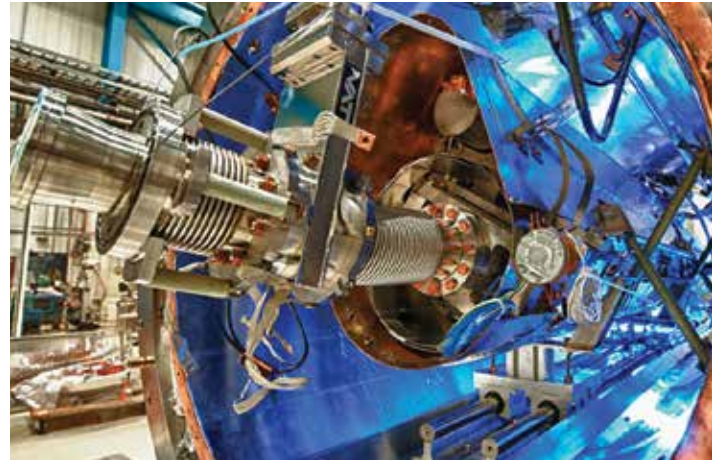
Professor Menoni is an internationally recognized researcher in optics and laser science. A role model for women in engineering and science, she has established vibrant research programs in semiconductor physics, optical materials science and engineering, and nano-scale X-ray imaging. Menoni is a Fellow of the Institute of Electrical and Electronics Engineers, Optical Society of America, American Physical Society, and SPIE – the international society for optics and photonics. She also served as an IEEE Distinguished Lecturer for its 2014-2015 series.

V. "Chandra" Chandrasekar

With numerous publications and 13 licensed patents, Professor Chandra is a pioneer in the area of polarimetric radar observations of the atmosphere and urban observation networks. He is the CSU principal investigator and research director of the National Science Foundation Center for Collaborative Adaptive Sensing of the Atmosphere, and the co-principal investigator and technical director of the CSU-CHILL radar facility. Chandra is a Fellow of the IEEE and American Meteorological Society.

Jorge Rocca

Professor Rocca is an international leader in the development of compact X-ray lasers. He has gained much recognition for his pioneering contributions to laser research and groundbreaking discoveries particularly valuable for nanoscience and nanotechnology. Rocca received the Willis E. Lamb Award for Laser Science and Quantum Optics in 2011 and was awarded the Arthur L. Schawlow Prize in Laser Science from the American Physical Society. He is a Fellow of the APS, the Optical Society of America, and the IEEE.



ECE Work Gains CSU Entry into National Association

Colorado State University is the latest research institution to be admitted to the Universities Research Association, one of the entities that helps manage the Fermi National Accelerator Laboratory. CSU was elected in February by the association's Council of Presidents. The URA, in conjunction with the University of Chicago, forms the Fermi Research Alliance, which manages the federal laboratory for the U.S. Department of Energy's Office of Science. CSU is the 89th university to join the URA.

CSU gained entry based not only on its particle physics work but its accelerator research, which is based in the ECE department. Since receiving a linear accelerator donation and other materials in 2013 from the University of Twente in the Netherlands, ECE Professors Sandra Biedron and Stephen Milton have been working with

the Dutch university on a series of projects, including generating Terahertz radiation, compact light sources, high-gradient acceleration, and seeding schemes for next-generation light sources. The Boeing Company also contributes to their work at the Advanced Beam Laboratory, a facility built by Colorado State to leverage the unique synergies between laser, microwave, accelerator, and light source technologies.

"CSU will greatly benefit from having a tighter connection with the nation's leading accelerator laboratory," Biedron said. "It will help advance our accelerator research and connect our students to research and engineering that benefits the particle physics and other user communities. It also permits CSU students to work more closely with scientists and engineers in the national laboratory."

Pasricha Honored by College of Engineering

ECE Associate Professor Sudeep Pasricha has been named the recipient of the College of Engineering George T. Abell Outstanding Mid-Career Faculty Award, an honor that recognizes CSU engineering faculty for excellence in teaching, research, and service.



Associate Professor
Sudeep Pasricha

With more than \$2 million in research support from outside agencies such as the National Science Foundation and the Air Force Office of Scientific Research, Pasricha has garnered an international reputation for his pioneering work in energy-efficient and fault-tolerant embedded, mobile, and high-performance computing systems. He was one of 40 scientists and engineers to receive the AFOSR Young Investigator Award.

Four New Fellow Awards for ECE Women

The department's trailblazing female faculty are making their marks. In the last year, ECE Professors Carmen Menoni, Jade Morton, and Liuqing Yang have been named Fellows of important professional societies, a status reserved for the most accomplished scientists and researchers.

Menoni Elected as SPIE Fellow



Carmen Menoni

University Distinguished Professor Carmen Menoni, who has been an inspiration to women in engineering since the early '90s when she joined Colorado State, was honored by SPIE – the international society for optics and photonics – for innovative contributions to extreme ultraviolet and soft X-ray imaging and for contributions to advancing optical materials. Selected annually, SPIE Fellows are honored for technical achievement, service to the optics community, and to SPIE in particular. The SPIE award is the fourth Fellow honor for Menoni. She also holds Fellow appointments with the Institute of Electrical and Electronics Engineers, American Physical Society, and Optical Society of America.

New IEEE Fellows: Morton and Yang



Jade Morton



Liuqing Yang

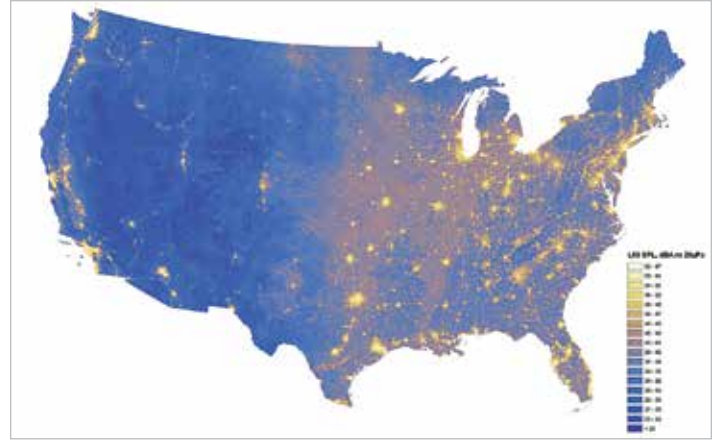
Professor Jade Morton, ECE's newest faculty member, was named a Fellow of the Institute of Electrical and Electronics Engineers for her contributions to the understanding of ionospheric effects on global navigation satellite signals. Morton is also the recipient of the 2014 Institute of Navigation Thurlow Award and the 2013 Miami University Distinguished Scholar Award.

With nearly half a million IEEE members in 160 countries, less than 0.1 percent of voting members are selected annually as Fellows. More than 40 percent of CSU ECE faculty hold the extraordinary status of IEEE Fellow.

Professor Liuqing Yang has been recognized as an IEEE Fellow for her contributions to theory and practice of ultra-wideband communications. A prolific and talented scholar, Yang's honors include the prestigious National Science Foundation Early Career Development Award, the Office of Naval Research Young Investigator Program Award, College of Engineering George T. Abell Outstanding Mid-Career Faculty Award, and a listing in Marquis' *Who's Who in America*. Yang has been published in numerous prestigious journals, and her papers have been cited more than 3,500 times.

Morton Named Fellow of the Institute of Navigation

In January, Professor Jade Morton was named a Fellow of the Institute of Navigation for her contributions to Global Navigation Satellite System software receivers and the development of a worldwide network of space weather monitoring stations. Morton has contributed to an understanding of the ionosphere and its effect on GNSS signals, and to the advancement of satellite navigation technology. By combining her expertise in both satellite navigation and space science, Morton has created innovative solutions to advance knowledge and applications in both fields.



ECE Researchers Help National Park Service Map Sound of Silence

Researchers in the Department of Electrical and Computer Engineering at Colorado State University are helping the National Park Service study the impact of noise pollution on wildlife and park visitors. Professor Mahmood Azimi and his team are developing novel software, firmware, and hardware solutions to enable long-term, continuous, and unattended monitoring of natural sounds in our national parks, as well as man-made noises that aren't so peaceful, such as the rumble of motorcycles or the whir of air traffic.



In the past, NPS scientists collected more than a million hours of sound using cost-prohibitive, heavy, power-hungry recording devices that required countless hours of manual post-processing and data analysis to identify the sources of sounds. While findings from these devices allowed the NPS to create a preliminary map of the loudest and quietest areas in the country, it was just the first step in addressing the problem of noise pollution.

"The National Park Service wanted to broaden their reach to include the most remote places of our national parks and extend

the duration time of their data collection, but they were limited by the existing systems," said Azimi. "In addition, NPS scientists were spending hours and hours trying to crunch the data and identify the source of each sound."

Developing a Solution

The new solutions developed by Azimi and his team create a network of sophisticated sensor nodes that are cheap, lightweight, and intelligent, with onboard processing capabilities. Outfitted with solar panels and batteries, the nodes can be deployed to far-off corners of the national parks for months at a time to gain a comprehensive picture of the noise distribution. Featuring a variety of communication capabilities, the sensor nodes are programmed to work together, forming a network that monitors, collects, processes, and classifies the sounds with tremendous accuracy. Summary results are then wirelessly transmitted in real time to a park station, eliminating the need for in-depth post-data analysis in the laboratory.

"This development is a huge step for us as we strive to expand the scope of our work and provide answers to the problems associated with unnatural sounds in our parks," said Kurt Fistrup, senior scientist for the NPS. "Our collaboration with CSU will ultimately provide tremendous benefits for the integrity of ecosystems and protection of wildlife in our national parks, and that's the most important duty for all of us."