The 2016-17 academic year has been another great year for computer science at K-State. It marks the seventh consecutive year of growth in our undergraduate program, with an amazing 26 percent increase. In fall 2016, the department had 628 undergraduate, 33 master’s and 46 doctoral students. However, we also graduated 83 students, which is almost double the largest CS class in recent memory.

The first year of our new CS Scholars Program is in the books. According to all reports, it was a resounding success. Twenty-two scholars completed their first year and we are expecting a full class of 30 new scholars this fall. Overall, the scholars program distributed more than $24,500 in scholarships and financial assistance, thanks to our corporate partners Tradebot and Boeing, and the generosity of Don and Cleo Mounday through the Don and Cleo Mounday Scholarship Fund. Outside of their normal classes, our students have stayed busy in several clubs and competition teams. This year our Cyber Defense Club went to two cybersecurity competitions, winning the CANSec Invitational Cyber Defense Competition for the second year in a row and placing second to the University of Illinois at Argonne National Laboratory’s Cyber Defense Competition 2017.

As usual, the faculty continues to impress as well. John Hatzcliff was awarded the Lucas-Rathbone Professorship in Engineering, established by Michelle Munson and Serban Simu. In addition, we also awarded four Keystone Research Scholars to two existing faculty, Pavithra Prabhakar and Eugene Vasserman, and two new faculty, George Amariucai and Arslan Munir.

The goal of the Keystone Research Scholars Program is to recruit and retain top scholars into CS. Pavithra Prabhakar was also awarded a prestigious Young Investigator Program (YIP) award from the office of Naval Research. Her CAREER award last year, coupled with her YIP award this year, places Pavithra in an elite class of young faculty members nationwide. And finally, Julie Thornton was awarded the Clair A. Mauch Steel Ring Advisor of the Year Award for excellence in student advising. Julie is one of our own (B.S. 2003, M.S. 2005), and has been an instructor and academic adviser in the department since 2005. All these awards were well deserved.

Overall, 2016-17 was a great year for the CS department. If you are interested in getting more involved with or supporting the department, please let us know.

Scott DeLoach
Department head and professor
EDUCATION

K-State College of Engineering CS@K-STATE Summer 2017

Over the years, the project was strongly supported by CIS/CS department heads, Ou, former computer science assistant professor, and Alex Bardas, a doctoral student in computer science at that time, started the Cyber Defense Club, or CDC, project at K-State. The initial goal was to teach students critical knowledge and skills needed to defend computer networks and systems.

The project included developing the curriculum for a one-credit-hour Cyber Defense Basics class, teaching the class, building a cyber defense laboratory for teaching and research purposes, and starting a security club that would provide hands-on training and hard work from all club members,” Vasserman said. “We would not be able to maintain our strong competition track record without the involvement of everyone on the club and in the Cyber Defense Club. Through guest speakers, training sessions and education activities, our members challenge each other to improve their skills and knowledge of cybersecurity.

Our success is truly a team effort.”

For more information about Argonne National Laboratory’s Cyber Defense Competition 2017, visit cyberdefense.anl.gov.

PHOTO COURTESY WES AGRESTA, ARGONNE NATIONAL LABORATORY

EXCELLENCE

K-State College of Engineering

CIS@K-STATE Summer 2017

Kansas State University’s Cyber Defense Club has earned top-tier recognition from Argonne National Laboratory. Six members of the club tied for second place at the laboratory’s second Cyber Defense Competition on April 1 in Lemont, Illinois. The competition included 15 teams from colleges and universities across the country. The K-State team shared the second-place honor with Dakota State University, while the University of Illinois took first place.

Competing at the event were the following K-State students: Jordan Voss, sophomore in computer science; Hays; Lance Pettay, senior in computer science; Hutchinson; Richard Petrie, master’s student in business administration, Lenexa; Nathan Hood, freshman in computer science, Olathe; Logan Prough, sophomore in computer science, Olathe; and Matt Web, master’s student in computer science, Colorado Springs, Colorado.

“I’m very proud of our team,” said Petrie, president of the Cyber Defense Club. “I am especially proud that we maintained a positive attitude, even when things started to go wrong. Our team fixed any problems, patted each other on the back and kept working. Mistakes are a part of competition. You fix them, learn from them, and keep working to accomplish the task.”

The competition included a staged real-life scenario. Collegiate teams — called blue teams — had three weeks to create and design a cyberdefense network for a green team, which represented a utility company and its employees and customers. The collegiate teams set up their systems at Argonne National Laboratory, where a red team of professional hackers tried to infiltrate and disrupt the cybersecurity networks designed by the collegiate teams. The students had to defend their networks from cyberattacks while still providing services to the green team.

The collegiate teams were scored based on the security of their network as well as the accessibility of their services to members of the green team.

The Cyber Defense Club has 26 members for the 2016-17 school year. All members regularly train for competitions and contribute to the success of the team members who attend, said Eugene Vasserman, associate professor of computer science and faculty adviser to the club.

“I am proud of the team’s success at the latest national competition, which followed several weeks of preparation, training and hard work from all club members,” Vasserman said. “We would not be able to maintain our strong competition track record without the involvement of everyone in the Cyber Defense Club. Through guest speakers, training sessions and education activities, our members challenge each other to improve their skills and knowledge of cybersecurity. Our success is truly a team effort.”

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PHOTO COURTESY WES AGRESTA, ARGONNE NATIONAL LABORATORY
**NEW FACULTY**

**Arslan Munir** joined the computer science, or CS, department as a tenure-track assistant professor in June 2017. Previously, he had been a tenure-track assistant professor in the department of computer science and engineering at the University of Nevada, Reno, as well as a postdoctoral research associate in the electrical and computer engineering department at Rice University in Houston.

He received his master’s degree from the University of British Columbia in 2007 and his doctorate from the University of Florida in 2012, both in electrical and computer engineering. He also worked as a visiting graduate research student at the University of Toronto for one semester during his doctoral studies.

A recipient of many academic awards, Munir holds gold medals for best performance in electrical engineering, academic Roll of Honor and doctoral fellowship from the Natural Sciences and Engineering Research Council of Canada. He has published more than 35 scholarly articles related to his research interests, and recently published a book on modeling and optimization of parallel and distributed embedded systems in Wiley-IEEE.

Munir is a founding director of K-State’s Parallel Reconfigurable Architecture and Distributed Embedded Systems Laboratory, and is involved in various research projects including efficient algorithms and hardware architectures for mobile radiation detection and isotopic identification, fog-assisted sensing and wireless communications. He has been awarded four NSF grants and one NSA grant, totaling close to two million dollars, for cybersecurity projects focused on unconventional secure key establishment, community-enhanced authentication and procedure-learning-based authentication.

He has sponsored and advised multiple graduate and undergraduate students, and published more than 25 articles in various prestigious journals and conferences. One of his more recent research interests is exploring interactions between the area of cyber security, and social and behavioral sciences.

**George Amariciucai** will join the department of computer science at K-State in fall 2017 after serving at Iowa State University since 2009, first as an adjunct assistant professor and then as an adjunct associate professor.

His research interests lie in the area of cyber security, and its intersections with probability and information theory, cryptography, machine learning, and security architecture for high-throughput phenotyping. He has been awarded four NSF grants and one NSA grant, totaling close to two million dollars, for cybersecurity projects focused on unconventional secure key establishment, community-enhanced authentication and procedure-learning-based authentication.

He has sponsored and advised multiple graduate and undergraduate students, and published more than 25 articles in various prestigious journals and conferences. One of his more recent research interests is exploring interactions between the area of cyber security, and social and behavioral sciences.

Amariciucai is also passionate about teaching and is an advocate of the hybrid classroom paradigm. In 2015, he received an undergraduate teaching award from Iowa State University’s department of electrical and computer engineering. He has taught multiple graduate and undergraduate courses, on campus and online, with enrollments ranging from 10 to 350.

He received his doctorate from Louisiana State University in 2009, and his master’s and bachelor’s degrees from the Polytechnic University of Bucharest, Romania. He came to the United States in 2004, and is an enthusiast of the outdoors and the American Midwest.

**OPTIMIZING AUTONOMOUS AUTOS**

**Self-driving cars, robotic vacuum cleaners and thermostats exemplify the kind of autonomous systems research that played a role in a Kansas State University faculty member receiving a Young Investigator Award from the Office of Naval Research’s Science of Autonomous Program.**

The approximately $500,000 award will allow Pavithra Prabhakar, associate professor of computer science, to design software for small vehicles — under 3 feet tall — that have varying levels of autonomy. Some will rely completely on their own sensors and programming to make decisions, while others will incorporate human intervention for direction, speed and responses to environmental factors.

Prabhakar’s project will focus on two challenges: robustness, which is measured by the vehicle’s ability to adjust to changes in the environment, and optimality, measured by the vehicle’s ability to conduct its tasks with as little fuel and time as possible.

“Robustness is important when vehicles are being sent into potentially changing landscapes and seascapes, especially if there is a current in the water where aquatic vehicles are operating,” Prabhakar said. “Optimality is necessary not only for efficiency but also for safety because speed in dangerous areas can make the difference of whether the vehicle is able to complete its mission.”

Prabhakar said her research may be important to the U.S. Navy because autonomous underwater vehicles can explore and photograph areas of the ocean floor where the Navy may not want to send humans. Other branches of the military may use autonomously driven unmanned aerial vehicles to fly over dangerous disaster areas and send information back to human decision-makers.

Prabhakar’s research may be especially valuable in military applications, especially crucial when human intervention could put people at risk,” Prabhakar said. “On the consumer side, there will certainly be more and more autonomous systems, and the challenge is how can these systems be made reliable so that they are more widely available.”

Prabhakar was one of six College of Engineering faculty members to be named as a Michelle Munson-Serbian Simu Keystone Research Faculty Scholar in January. She also has received the National Science Foundation CAREER Award, a Summer Faculty Fellowship from the Air Force Research Lab and the Marie Curie Career Integration Grant from the European Union.
Nathan McClain, arising sophomores majoring in computer science and physics, has been selected as a 2017 Cargill Global Scholar.

The Cargill Global Scholars Program, a distinctive international scholarship program that began in 2013, offers a scholarship award of $2,500 per year for up to two years.

In addition to scholarship funding, McClain will join the nine other scholars selected for the program’s fifth cohort in the U.S. for a three-day leadership development seminar in late June at Cargill Headquarters in Minneapolis. During the seminar, scholars will receive training in a variety of business and leadership skills, tour Cargill’s Food Innovation Center and get to meet Cargill business leaders who will serve as their mentors for the next year.

In the summer of 2018, McClain and his fellow U.S. cohort members will participate in a five-day global leadership seminar with scholars selected for the program from Brazil, China, India, Indonesia and Russia.

Students selected as Global Scholars are those who demonstrate exemplary academic achievement and leadership potential, and study in a field relevant to Cargill’s world of food, agriculture and risk management.

McClain is the seventh Cargill Global Scholar finalist to come from K-State since the program began.

For more information about the Cargill Global Scholars Program, visit www.cargillglobalscholars.com.

## Computer Science Students Named 2017 Cargill Global Scholar

### Master of Science in Computer Science

#### Fall 2016
- Nicholas A. Boen
- Abhishek Challa
- Yang Chen
- Pramod Kumar Gudipati
- Keerthi Konvi
- Soumyma Mathukumalli
- Tyler Edward Robinson

#### Spring 2017
- Chandanaylas Annakula
- Shubh Chopra
- Anamika Nugar Choudhary
- Chane L. Courtney
- Shrvan Dammannagari Gandhi
- Aruna Sai Kanavandity
- Swapnil Kumar
- Uma Malleshwar Reddy
- Mandadi Venkata

### Master of Science in Computer Science

#### Fall 2016
- Alex Donnelly
- Jacob-Hurl Erfich
- Zhefan Gu
- Christopher David Gieringer
- Domenic Vincent Haeflinger
- Daniel Arlon Jones
- Josung Kim
- Pavel Kuperatkin
- Phuong Thieu Le
- Donovan Alan Mitchell
- Yashkumar Nareshbhai Patel
- Joshua Reed
- Brandon Thomas Runyan
- Gui Xian Say
- Adam James Seiwert
- Andy Carl Siver
- Peter Blank Schumberg
- Nathan McColl

**Doctor of Philosophy in Computer Science**

#### Spring 2017
- Pavel Janovsky
- Joshua Wiese

**Master of Science in Computer Science**

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- Yang Chen
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- Keerthi Konvi
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#### Spring 2017
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- Joshua Wiese
The 95th annual Engineering Open House was March 31-April 1, 2017. Departmental highlights included a Wonka-themed skit; many displays and demonstrations; a CS St. Patricia nominee, Miriam Feldhausen; and CS faculty member, Julie Thornton, being named Clair A. Mauch Steel Ring Advisor of the Year.

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 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.

Based on previous records of outstanding research accomplishment, two computer science faculty were nominated by Scott DeLoach, department head, for these positions. Pavithra Prabhakar, assistant professor, and Eugene Vasserman, associate professor, will receive a three-year appointment with a salary increase and discretionary funds to support travel, specialized equipment and additional graduate students to join their research teams.

Funded by a gift from Michelle Munson, 1996 electrical engineering graduate, and her husband, Serban Simu, the first six recipients have been named as Michelle Munson-Serban Simu Keystone Research Faculty Scholars. Four additional Keystone Research Scholars will be announced at a later date.

K-State College of Engineering CS@K-STATE Summer 2017
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Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the University’s programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University’s Title IX Coordinator: the Director of the Office of Institutional Equity, equity@k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277. The campus ADA Coordinator is the Director of Employee Relations, charlott@k-state.edu, who may be reached at 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277.

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