

2014 Computer Science Department Newsletter

Thanks to our exceptional faculty, staff and students, 2014 has been another productive and rewarding year for the Computer Science Department. We continue to expand our curriculum and research across multiple diverse areas—artificial intelligence, computer system architecture, computational systems biology, graphics & vision, information & data management, network systems, software systems, and computer science theory.

The Department's centers and institutes continue to explore and receive funding for 21st century cutting-edge research. The *Center for Domain-Specific Computing* develops customizable architectures and high-level computer languages tailored to particular application domains. It is a collaborative effort with UCLA's Computer Science, Electrical Engineering, Mathematics, and Radiological Science departments, and the departments of three other universities. The *UCLA Wireless Health Institute* is a comprehensive merging of medicine, computer science and engineering to advance the quality and accessibility of healthcare. The *Center for Information and Computation Security* explores novel techniques for securing both national and private-sector information infrastructures across network-based and wireless platforms. The *Center for Autonomous Intelligent Networks and Systems* has an interdisciplinary focus that includes engineering, medicine, biology and the social sciences. The focus of our new *Scalable Analytics Institute* is on the continuing growth of data and the demand for smart analytics to mine that data.



UCLA's Boelter Hall

**Home to the Computer
Science Department and
birthplace of the early
Internet.**

2014 Faculty Highlights

New Faculty

We are pleased to welcome our three new faculty members whose interests lie in such diverse computer science fields as software evolution, complexity and learning theory, probability and combinatorics, data mining, statistical machine learning, and computational genomics.

Miryung Kim, Associate Professor. Miryung joined the Department after a six-year faculty appointment with the University of Texas at Austin. She received her Ph.D. from the University of Washington in 2008. Miryung's expertise is in software engineering—specifically software evolution. She develops software analysis algorithms and development tools to make it easier to develop and evolve large-scale software systems.

Raghu Meka, Assistant Professor. Raghu came to the Department after working as a researcher at Microsoft Research in Silicon Valley. He received his doctorate from the University of Texas at Austin in 2011 and spent the next two years at Princeton as a postdoctoral fellow. Raghu's research interests lie in complexity theory, pseudo-randomness, algorithms, learning, probability, and data mining.

Ameet Talwalker, Assistant Professor. Ameet joined the Department after serving as a technical advisor for Databricks (software and hosted services for extracting value from big data), a postdoctoral scholar (Berkeley), an intern (Google New York), a researcher (Rockefeller Univ.), and a software developer/consultant for several companies. He received his Ph.D. in 2010 from the Courant Institute, New York University. Ameet's focus is on scalability and ease-of-use issues in the field of statistical machine learning.

Faculty Statistics

Currently, the Department's faculty comprises 27 full professors (4 with joint appointments), 5 assistant professors (1 with joint appointment), 3 associate professors, 11 adjunct professors, 14 emeritus professors, and 2 SOE lecturers. Faculty awards are too many to enumerate, but past awards have included an Academy Award, the Turing Award, Kyoto Prize, Dan David Prize, Draper Prize, Erickson Prize, and the National Medal of Science, among others. The awards and honors for 2014 follow.

2014 Faculty Awards and Honors

Leon Alkalai	Selected as a JPL Fellow
Tyson Condie	NSF Faculty Early Career Development Award Awarded Okawa Research Grant to support research on big data
Jason Cong	ICCAD Ten-Year Retrospective Most Influential Paper Award Distinguished Alumni Achievement Award, UIUC CS Department
Leonard Kleinrock	SIGMOBILE 2014 Outstanding Contributions Award
Stanley Osher	Named a "Highly Cited Researcher" (2014) by Thompson Reuters Awarded Gauss Prize from the Int'l Congress of Mathematicians

Judea Pearl	Elected to the National Academy of Sciences
Alexander Sherstov	2014 Alfred P. Sloan Research Fellowship 2014 Northrop Grumman Excellence in Teaching Award
Demetri Terzopoulos	Elected Fellow of the Royal Society of London ICCV Helmholtz Prize from the IEEE Computer Society
Lixia Zhang	Selected by ICANN for its Identifier Technology Innovation Panel

2014 Student Highlights

The Computer Science Department is currently the academic home to 161 Ph.D. students, 238 M.S. students, and 727 B.S. students. We feel that the quality of our computer science program attracts *the best and the brightest*.

We now have a very fine “Introduction to the Computer Science Department” video for undergraduates who are interested in a computer science major. This video will soon be found on the Department website <http://www.cs.ucla.edu/about/annual-reports>.

Graduating Students

The 2014 commencement ceremonies for the Henry Samueli School of Engineering & Applied Sciences were held in UCLA’s Pauley Pavilion. In the Computer Science Department program, 38 students received Ph.D. degrees, 81 received M.S. degrees, and 172 received B.S. degrees.



2014 Commencement

**Henry Samueli School
of Engineering & Applied
Sciences**

Student Achievements

Ph.D candidate Nabil Alshurafa’s work on a cellphone application for the mHealth project was featured in a December 2014 *LA Times* article.

Six undergraduate students were selected to attend the 2014 Grace Hopper Celebration of Women in Computing conference: Grace Chin, Enyu Hsu, Evan Liu, Jessica Pham, Janice See, and Christina Yang.

Undergrad students Zheng Sun (CS) and Byron Pang (ME) were recently featured in a Daily Bruin article for creating a website that highlights more than 100 locales across the city along nine bus routes.

Recently graduated Ph.D. student Elias Bareinboim is the recipient of the 2014 Edward K. Rice Outstanding Doctoral Student Award from the Henry Samueli School of Engineering & Applied Research.

Ph.D. student Umut Oztok received a Best Student Paper Award from the 20th International Conference on Principles & Practice of Constraint Programming.

Graduate students Kai Zeng, Shi Gao and Jiaqi Gu (with advisor C. Zaniolo) received a Best Demo Award at the 2014 ACM SIGMOD Conference.

Graduate student Elias Bareinboim received a scholarship from the Dan David Foundation, headquartered at Tel Aviv University.

Undergraduate student Rohan Chitalia was selected as a 2014 KPCB Engineering Fellow.

Former Ph.D. student Sanjam Garg is a recipient of the 2013 ACM Doctoral Dissertation Award.

2014 Research Highlights

We are especially proud of our funded research programs. In the 2014 time frame, the Department received nearly \$11.6M in new grants from federal and industry sources. As you will see from the sampling below, an increasing focus of research is on collaborative efforts—especially in the healthcare and computer security domains.

A Sampling of New Research Areas

mHealth. The mHealth project has brought about novel applications related to remote health monitoring. As one of its objectives, the project provided smartphones loaded with an application developed by UCLA that interacts with at-risk women in a clinical trial setting. The app is designed to track eating habits and activities, with the goal of teaching these women the benefits of exercise and a healthy diet.

Questions in Non-interactive Cryptography. This research focuses on the notion of secure computation. It is a collaborative effort between the UCLA Computer Science Department and the Israel Institute of Technology (Technion), with funding through the U.S.-Israel Binational Science Foundation.

Virtual Tissue Modeling for Realtime Surgical & Interventional Procedure Simulation. Funded by the DoD through the UCLA Center for Advanced Surgical and Interventional Technology, the objective of the virtual tissue modeling project is to develop military medical training simulators for forward surgical and interventional care of combat injuries.

Named Data Networking Project. NDN is a new Internet architecture design that does away with the standard TCP/IP currently used to distribute information across the globe and replaces it with a content-centric networking technology.

InTrans Award. The InTrans program extends the research efforts previously funded under our Expeditions program, with the goal of bringing domain-specific computing technology to the point where it can be produced at a microchip fabrication plant for a mass market. Medical imaging and patient-specific cancer treatments have been selected as the test applications.

Encrypted Functionalities Center. An NSF Frontier award established this collaboration among researchers at UCLA, Stanford, Columbia, U. Texas at Austin, and Johns Hopkins. The goal is to use new encryption methods, called *program obfuscation*, to make a computer program, and not simply its output, invisible to any outside observer.



Program Obfuscation

How can we keep our computer systems safe from attackers?

We began this newsletter by saying that 2014 has been a productive and rewarding year. I feel very confident that 2015 will prove to be even more so. It has been a pleasure to work with you, and again, thank you all for your contributions and support.

A handwritten signature in cursive script that reads "Jens Palsberg".

Jens Palsberg
Chair
Computer Science Department