



Game-Changing Hires in Machine Learning, "Big Data," Computer Vision, and Computer Systems

*"Although Stanford is considered the Hogwarts of techdom,
UW has quietly established itself
as the other West Coast nexus of the information economy."*

– The New York Times



UNIVERSITY of WASHINGTON



“UW is to be congratulated on making such great acquisitions,
which I believe will propel them into a leadership role
(with a select number of other top institutions)
in the areas of machine learning and artificial intelligence.”

- *Daphne Koller, Rajeev Motwani Professor of Computer Science,
Stanford University*

University of Washington Computer Science & Engineering

University of Washington Computer Science & Engineering – long regarded as one of the top ten programs in the nation – is taking advantage of new investments by the University of Washington to make game-changing faculty hires.

Located in one of the world's most vibrant high-tech regions, UW CSE is committed not only to leadership in core computer science, but also to leadership in research that has direct impact on global challenges – challenges such as education, energy, biology, healthcare and the use of technology in developing regions. UW CSE has achieved great success and impact through research that makes technology better, and through research that is motivated by how innovations are put to work.

Essential to this commitment are outstanding people. This year, a set of senior hires, building on CSE's existing strength, position UW at the forefront of machine learning and "big data." Junior hires in computer vision and computer systems reinforce these traditional areas of leadership.



Four Game-Changing Senior Hires in Machine Learning / "Big Data"

Machine learning is transforming the way many fields make sense of data, from engineering and science to medicine and business. Leadership in modern data management and data analysis is crucial to competitiveness. Four game-changing senior hires will drive research and teaching in this field.

Carlos Guestrin, Amazon Professor of Machine Learning



Considered one of the world's leading researchers in machine learning, Carlos Guestrin joins UW Computer Science & Engineering in fall 2012 from Carnegie Mellon University, where he was the Finmeccanica Associate Professor in the School of Computer Science. Previously he was a senior researcher at Intel Research Berkeley.

Carlos received his M.Sc. and Ph.D. in computer science from Stanford University in 2000 and 2003, respectively, and a mechatronics engineer degree from the Polytechnic School of the University of São Paulo, Brazil, in 1998. His research includes developing highly scalable machine learning algorithms. Common themes in the research include developing theoretically-founded

algorithms, unifying methods from statistics, optimization theory and machine learning, and exploiting problem-specific structure. His GraphLab system, supporting a high-level graph-parallel abstraction, is a widely-used breakthrough.

Carlos is the recipient of a Sloan Research Fellowship, a Presidential Early Career Award for Scientists and Engineers, and the IJCAI Computers and Thought Award. He was named one of the 2008 "Brilliant 10" by *Popular Science* magazine.

Ben Taskar, Boeing Professor of Computer Science & Engineering



Ben Taskar – who along with Carlos Guestrin is one of the leading researchers of his generation in statistical machine learning – will join UW CSE in spring 2013. Ben is currently the Magerman Term Associate Professor in the Department of Computer and Information Science at the University of Pennsylvania.

Ben received his M.S. and Ph.D. degrees in computer science from Stanford University in 2000 and 2005 respectively, and his B.S. in computer science from Stanford in 1998. Ben's primary research interests are machine learning and its applications to computational linguistics and computer vision – helping computers to process visual information and to understand human language. He has focused on several general themes firmly grounded in applications:

learning from weak supervision, computational trade-offs in structured prediction and probabilistic models of diversity.

Ben's work has been recognized with an NSF CAREER award, a Sloan Research Fellowship, and an Office of Naval Research Young Investigator Award.

"They're a kind of dream team of the computer-science world: Four of the brightest academics in the fields of "big data" and machine learning have been wooed away from top schools to join the University of Washington over the next year."

— *The Seattle Times*

Jeffrey Heer, Associate Professor of Computer Science & Engineering



A faculty member in computer science at Stanford University with research interests in the perceptual, cognitive, and social factors involved in making sense of large data systems, Jeff Heer will join UW CSE in fall 2013.

Jeff is a superb researcher in the design of interactive, visual data-analysis tools, as well as tools for data cleaning and transformation. He holds B.S., M.S. and Ph.D. degrees in computer science from the University of California, Berkeley. Turning data into knowledge is a fundamental challenge for both computer systems and user interface research. It requires integrating analysis algorithms with human judgments of the meaning and significance of observed patterns. The

visualization tools developed by Jeff's lab (Prefuse, Flare, Protovis, and D3) are used by researchers, corporations and thousands of data enthusiasts around the world.

Jeff is the recipient of a Sloan Research Fellowship and a *Technology Review* TR35 award for the top innovators under the age of 35.

Emily Fox, Amazon Professor of Machine Learning in the Department of Statistics



Formerly an assistant professor in the Wharton Statistics Department, Emily Fox will join the UW's Department of Statistics in fall 2012 with an adjunct faculty appointment in CSE. Statistics is at the core of machine learning; Emily's strengths will expand UW's success in this field. Emily holds both a Masters and Ph.D. in EECS from MIT, along with a Bachelor's degree in EE. She has also completed a postdoc in the Department of Statistical Science at Duke University.

Emily's research interests are in multivariate time series analysis and Bayesian nonparametric methods. The research is focused on human motion, stock prices, and environmental sensors.

Emily is a recipient of the National Defense Science and Engineering Graduate (NDSEG) Fellowship, National Science Foundation Graduate Research Fellowship, and NSF Mathematical Sciences Postdoctoral Research Fellowship. She was awarded the 2009 Leonard J. Savage Thesis Award, given for outstanding contributions to the application of Bayesian analysis.

Superb Junior Hires Amplify UW CSE's Outstanding Program in Computer Graphics and Computer Vision

Research in UW CSE's Graphics and Imaging Lab (GRAIL) span a wide range of areas in computer graphics, computer vision, computer animation, and game science. Current activities include 3D reconstruction, image-based rendering, computational photography, game play and aesthetics, and scientific discovery and education through games.

Recent student recognition includes:

- Three Ph.D. students recognized in the ACM Doctoral Dissertation Award competition in the past six years: Seth Cooper (winner, 2012), Noah Snavely (honorable mention, 2009), and Aseem Agarwala (honorable mention, 2006).
- TR35 awards to Ph.D. alums Noah Snavely (2011), Adrien Treuille (2009), and Karen Liu (2008).
- Sloan Research Fellowships to Noah Snavely (2012), Karen Liu (2010), and Li Zhang (2010). (Li Zhang also received a Packard Fellowship in 2010.)
- Technical Academy Awards to Ph.D. alums Brett Allen and Per Christensen, both in 2010.

Recent tech transfer and industrial impact include:

- Microsoft Photosynth
- Microsoft Group Shot
- Google Picasa Face Movie
- Google Maps Photo Tours
- Electronic Arts continuum crowds and style-based inverse kinematics
- Adobe Photoshop Auto-Align vignette correction
- Adobe Photoshop Elements Photomerge
- Adobe After Effects Roto Brush
- ESPN/NASCAR/Sportvision Draft Track

Breakthrough games for science and for learning:

- Foldit protein folding online game
- Refraction educational game for learning fractions



This year we have added two rising stars to the GRAIL faculty.

Ira Kemelmacher-Shlizerman



Ira Kemelmacher-Shlizerman received her Ph.D. in computer science and applied mathematics from the Weizmann Institute of Science in 2009. She is currently a postdoctoral researcher in UW CSE.

Ira's research is focused on problems in computer vision and computer graphics. Her recent emphasis is on developing computational tools that can capture, model, and render a person's appearance (particularly facial characteristics) and behavior from the billions of photos that can be found online or in personal photo collections. Her research on "Exploring Photobios" was highlighted by CBS, MSNBC, *New Scientist*, and others; as a consultant to Google, she developed the

"Face Movie" feature in Google's Picasa photo service from this work.

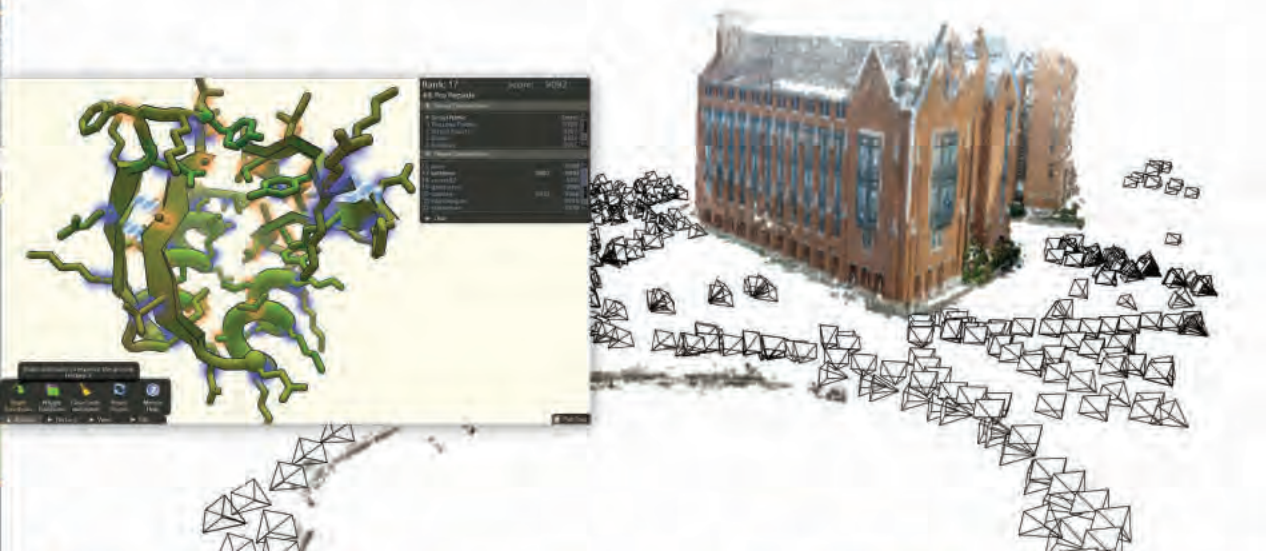
Ali Farhadi



Ali Farhadi received his Ph.D. from the University of Illinois in 2011 and is currently a postdoctoral fellow in the Robotics Institute at Carnegie Mellon University. He brings leadership in object recognition to our already-superb efforts in computer graphics, computer vision, games, and animation. He has made significant contributions to computer vision, specifically in the improvement of object recognition algorithms.

Ali was honored in 2011 with the best student paper award at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) for his work on visual phrases. He also received the inaugural Google fellowship in computer vision and image interpretation, and the University of Illinois' C.W. Gear award.

Ultimately, Ali's goal is to build recognition models that can provide deeper understandings of visual data and come closer to what humans can infer from images or videos. His primary focus has been on object recognition where he seeks deeper insights to profound questions about what an object recognition algorithm should predict for an image.



Computer Systems, Wireless Systems, Security, and Privacy

UW CSE pursues high-impact, innovative research into fundamental aspects of networks, operating systems, distributed systems, security, and privacy.

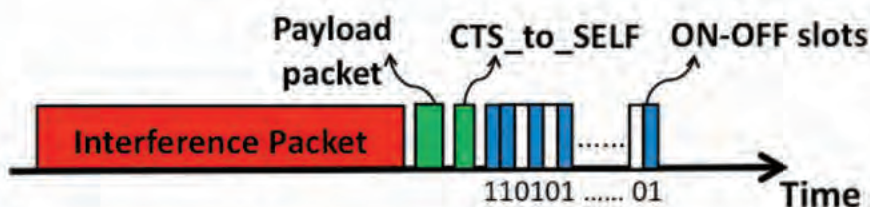
Our current research activities in systems and networking include operating systems structure; reliable networks and systems; robust protocol design; peer-to-peer systems; mobile systems; wireless network; the measurement of deployed, wide-area systems, such as the Web and content distribution networks; pervasive computing; high-performance, scalable cluster-based systems; file systems; cloud computing, and virtual machine technology. Our current research interests in security and privacy focus on Internet systems and services; embedded and cyber-physical systems; Web security; mobile device security; security and software engineering; anonymity; censorship; human-computer interaction and security; and security education.

Our record places us among the best systems, networking, security, and privacy research groups worldwide. Over the last decade, our research has been recognized with over 25 best paper awards at the major conferences in systems, networks, and security. This work also has broadened public awareness about security and privacy, and has helped shape public policy.

We are thrilled that Shyam Gollakota will add his strengths in wireless systems to the group this fall.



**Password-Free
Wireless Security**



Shyam Gollakota



Shyam Gollakota received his M.S. and Ph.D. degrees from the Massachusetts Institute of Technology and his B.Tech. degree from IIT Madras.

Shyam's primary research interest is in the area of wireless systems; his goal is to design and build new protocols and systems that improve the performance and security of wireless networks. As wireless and mobile systems play an increasingly important role in our lives, the demand for access to data from handheld devices increases. Shyam's research focuses on two main challenges that must be overcome to realize the full potential of modern wireless networks – performance and security.

Shyam has won two best paper awards at the ACM SIGCOMM conference (the leading conference in computer networking), one on security for implantable medical devices, and one on ZigZag, the first wireless receiver that can decode collisions of simultaneous transmissions without assumptions of synchronization, large differences in power, or special codes.



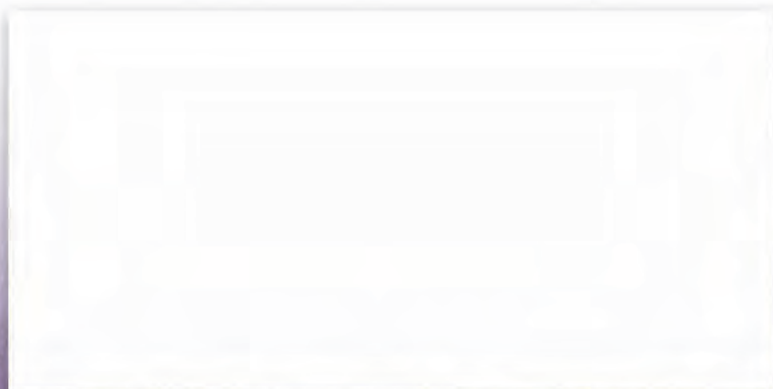


UW has had “some stunning recruiting successes.”

*– Peter Lee, Corporate Vice President
of Microsoft Research Redmond*



Computer Science & Engineering
University of Washington
Box 352350
Seattle, WA 98195-2350



**Game-Changing Hires in Machine Learning, "Big Data,"
Computer Vision, and Computer Systems**

<http://www.cs.washington.edu/>