University of Washington
Computer Science & Engineering

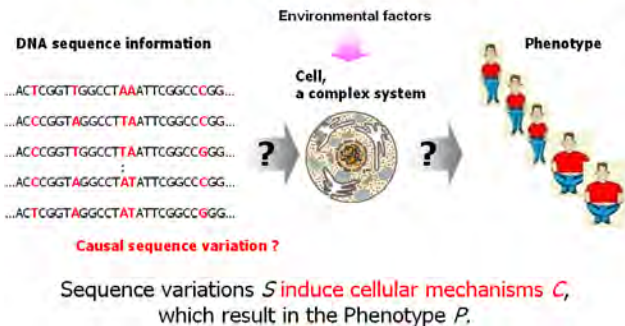New Additions to the Faculty

2009

Su-In Lee

Assistant Professor
Machine Learning and
Computational Biology

Su-In Lee joins the Department of Computer Science & Engineering and the Department of Genome Sciences in January 2010. She received her Ph.D. from Stanford University in January 2009 and was a visiting assistant professor at Carnegie Mellon University.

Lee's research focuses on devising machine learning techniques for understanding the genetic basis for complex traits. Humans differ in many "phenotypes" such as weight, hair color and more importantly disease susceptibility. These phenotypes are largely determined by each individual's specific "genotype," stored in the 3.2 billion bases of his or her DNA sequence. Lee's goal is to develop machine learning algorithms that can (1) translate sophisticated biological processes into robust statistical models; (2) infer their underlying mechanisms from high-dimensional, sparsely sampled data; and (3) learn such models from data efficiently. These approaches can enable more comprehensive understanding of disease genetics, potentially leading to the realization of personalized medicine.

From Genotype to Phenotype

DNA sequence information

...ACTCGGTTGGCCTAAATTCGGCCCGG...
...ACCCGGTAGGCCTTAATTCGGCCCGG...
...ACCCGGTTGGCCTTAATTCGGCCGGG...
...ACCCGGTAGGCCTATATTCGGCCCGG...
...ACTCGGTAGGCCTATATTCGGCCGGG...

Causal sequence variation ?

Environmental factors

Cell, a complex system

?   ?

Phenotype

Sequence variations *S* induce cellular mechanisms *C*, which result in the Phenotype *P*.

Anup Rao

Assistant Professor
Theory of Computing

Anup Rao joins Computer Science & Engineering in January 2010. He has just finished two and a half years as a postdoc, first at the Institute for Advanced Study and most recently at Princeton University. He completed his graduate work at the University of Texas at Austin.

Rao's research aims to to understand some of the foundational questions of computer science. His interests include finding mathematical explanations for why some computational problems are fundamentally harder than others and discovering the limitations of efficient computational processes. These kinds of questions can sometimes lead to strange and unexpected revelations — for example, a recent sequence of work that he was involved with led to the discovery of the most economical shape for soap bubbles.
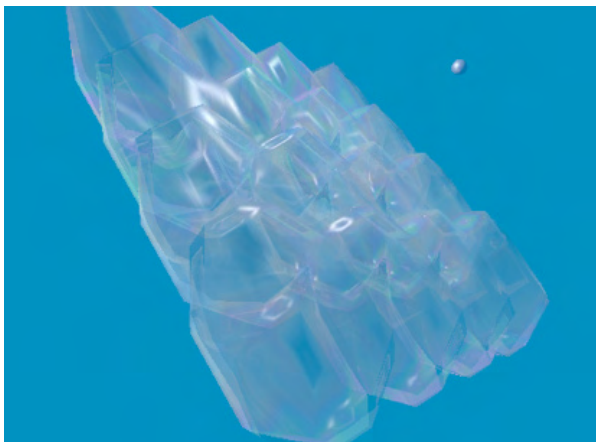
Luke Zettlemoyer
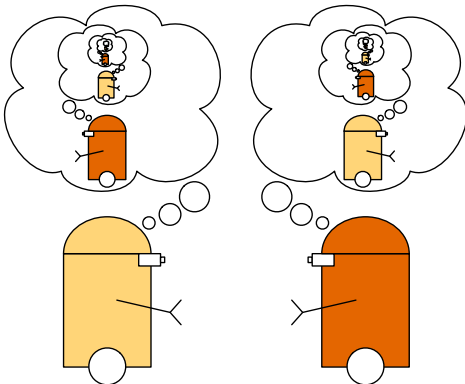
Assistant Professor
Artificial Intelligence

Luke Zettlemoyer joins Computer
Science & Engineering in July 2010,
following a postdoc at the University
of Edinburgh. He received his Ph.D.
from MIT.

Zettlemoyer's research focus is
in artificial intelligence. He has worked on problems
in natural language processing, machine learning, and
decision making under uncertainty.

One goal of this work is to build automated systems that
can have natural conversations with human users. He has
worked on a number of aspects of this problem, including
(1) grammar induction techniques for learning to
automatically convert sentences to logical representations
of their underlying meaning; (2) methods for efficiently
reasoning about nested beliefs ("I think that you think
that I think..."); and (3) algorithms for model learning and
decision making in large, structured environments.

Zettlemoyer is generally interested in building systems
that recover and
make use of
representations
of the meaning of
natural language
text.
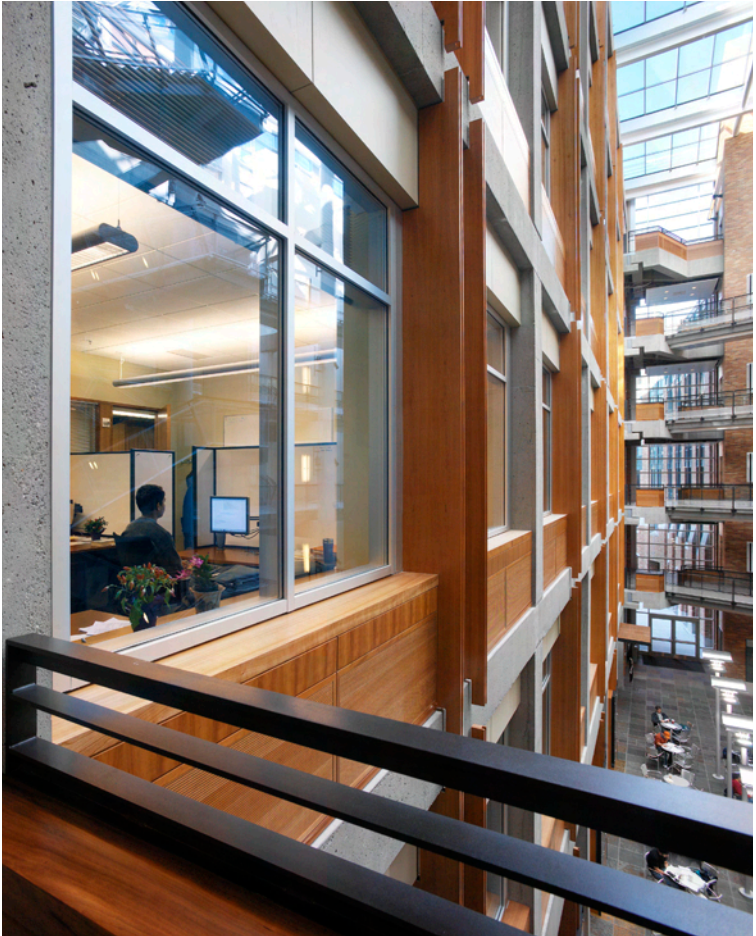
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