 Optimization under Statistical Uncertainty and Model Misspecification

Jose Blanchet
Associate Professor of Management Science and Engineering

Abstract:
We discuss a systematic approach to robust decision making which incorporates both statistical and model errors. We study applications in robust portfolio optimization and various machine learning tasks.

Biography:
Jose Blanchet holds a Ph.D. in Management Science and Engineering from Stanford University. Prior to joining MS&E he was a faculty member of Columbia and Harvard Universities. Jose is a recipient of the 2009 Best Publication Award given by the INFORMS Applied Probability Society and of the 2010 Erlang Prize. He also received a PECASE award given by NSF in 2010. He worked as an analyst in Protego Financial Advisors, a leading investment bank in Mexico. He has research interests in applied probability and Monte Carlo methods. He serves in the editorial board of Advances in Applied Probability, Journal of Applied Probability, Mathematics of Operations Research, QUESTA, Stochastic Models, and Stochastic Systems.
Doug James

Professor of Computer Science

Biography:

Doug L. James is a Full Professor of Computer Science at Stanford University (since June 2015), and is a consulting Senior Research Scientist at Pixar Animation Studios. He was previously an Associate Professor of Computer Science at Cornell University (2006-2015). He holds three degrees in applied mathematics, including a Ph.D. in 2001 from the University of British Columbia. In 2002 he joined the School of Computer Science at Carnegie Mellon University as an Assistant Professor, before joining Cornell in 2006. His research interests include computer graphics, computer sound, physically based modeling and animation, and reduced-order physics models. Doug is a recipient of a National Science Foundation CAREER award, and a fellow of both the Alfred P. Sloan Foundation and the Guggenheim Foundation. He received a 2012 Technical Achievement Award from The Academy of Motion Picture Arts and Sciences for "Wavelet Turbulence," and the 2013 Katayanagi Emerging Leadership Prize from Carnegie Mellon University and Tokyo University of Technology. He was the Technical Papers Program Chair of ACM SIGGRAPH 2015.
Big math for understanding ice

Jenny Suckale
Assistant Professor of Geophysics

Abstract:
The behavior of the ice sheets is the largest uncertainty in current projections of future sea level rise and may entail an order of magnitude shift in the rate of sea level rise. To rise to the challenge of understanding the future of ice, we combine recent advances in radar imaging, multi-scale and multi-physics computational models, and paleoclimate data.

Biography:
Before joining Stanford in January 2014, Jenny held a position as Lecturer in Applied Mathematics and as a Ziff Environmental Fellow at Harvard University. She holds a PhD in Geophysics from MIT and a Master in Public Administration from the Harvard Kennedy School. Prior to graduate school, Jenny worked as a scientific consultant for different international organizations aiming to reduce the impact of natural and environmental disasters in vulnerable communities.

The goal of Jenny’s research is to advance our basic understanding and predictive capabilities of complex multi-phase flows that are fundamental to Earth science. She pursues this goal by developing original computational methods customized for the problem at hand. The phenomena she explores range from the microscopic to the planetary scale and space a wide variety of geophysics systems such as volcanoes, glaciers, and magma oceans.

Jenny has taught both undergraduate and graduate courses in scientific, planetary evolution, and natural disasters. Since arriving at Stanford in January 2014, she has co-taught GES 118, Understanding Natural Hazards, Quantifying Risk, Increasing Resilience in Highly Urbanized Regions.
Trait inference on social networks

Johan Ugander

Assistant Professor of Management Science and Engineering

Abstract:
Individuals tend to be friends with people who are similar to themselves, a phenomena commonly known as homophily. While homophily describes a bias in preferences for similar others, attribute preferences can exhibit variation beyond what can be explained by models of homophily. We call this excess variation monophily to describe the presence of individuals with extreme preferences for a particular attribute possibly unrelated to their own attribute. We observe that monophily can induce a similarity among friends-of-friends on a network without requiring any similarity among friends. We demonstrate how homophily-based methods for predicting attributes on social networks based on friends, “the company you keep,” are fundamentally different from monophily-based methods based on friends-of-friends, “the company you’re kept in.” These findings offer an alternative perspective on network structure and attributes in general and prediction in particular, complicating the already difficult task of protecting privacy on social networks.

Biography:
Ugander’s research develops algorithmic and statistical frameworks for analyzing social networks, social systems, and other large-scale data-rich contexts. He is particularly interested in the challenges of causal inference and experimentation in these complex domains. His work commonly falls at the intersections of graph theory, statistics, optimization, and algorithm design.