THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

Statistics Colloquium

Armeen Taeb
Department of Statistics
University of Washington

"Complex Model Selection via Posets: Correlated Regression, Causal Graphs, and Phylogenetic Trees"

Monday October 27, 2025, at 11:30 AM
Jones 303, 5747 S. Ellis Avenue
Pre-seminar refreshments will be served in Jones 303 at 11:00 am

Abstract

In this talk, we consider model selection in complex model spaces, focusing on three case studies: regression with correlated features, causal graphs, and consensus phylogenetic trees. Standard selection criteria often fail to account for the structural and equivalence constraints inherent to such problems. To address this, we represent model spaces as partially ordered sets, which provide principled notions of similarity between models, allowing for more meaningful measures of model quality. In correlated regression, this framework yields refined notions of false positive error and feature stability. In causal discovery, it offers a unified, model-oriented way to define distances between graphs. Finally, in phylogenetics, it provides a procedure that yields a stable tree from a set of candidate trees, and enables quantification and control of false positive error.

Bio: Armeen is an assistant professor in the Department of Statistics at the University of Washington. Before UW, he was a postdoc at ETH Zurich and received his PhD at Caltech. His research interests lie at the interface of optimization and statistics. His work currently focuses on model selection in non-traditional settings and learning provably optimal causal models from data.

Information about building access for persons with disabilities may be obtained in advance by calling the Department Office, at 773-702-8333. If you wish to subscribe to our email list, please use the form located on the bottom of the following webpage: https://stat.uchicago.edu/events/statistics-colloquium/