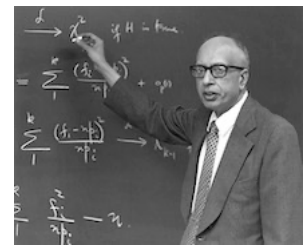


The University of Chicago, Department of Statistics

Bahadur Memorial Lectures

In honor of Raj Bahadur's fundamental contributions to statistics and to our department.



Emmanuel Candès

Stanford University

“Model-free selective inference”

Wednesday, May 1, 2024

3:30 PM, Jones Laboratory, Room 303, 5747 S Ellis Avenue

Abstract

Decision making or scientific discovery pipelines such as job hiring and drug discovery often involve multiple stages: before any resource-intensive step, there is often an initial screening that uses predictions from a machine learning model to shortlist a few candidates from a large pool. We describe screening procedures that aim to select candidates whose unobserved outcomes exceed user-specified values. We present novel methodology that makes no parametric assumptions whatsoever and wraps around any prediction model to produce a subset of candidates while rigorously controlling the proportion of falsely selected units. We also show how to extend this to situations where there is a distribution shift – as there often is -- between labeled data and test samples. We demonstrate the empirical performance by applying our method to job hiring and drug discovery datasets. This is joint work with Ying Jun (Stanford University).

Bio: Emmanuel Candès is the Barnum-Simons Chair in Mathematics and Statistics at Stanford University, and Professor of Electrical Engineering (by courtesy). His research interests lie at the interface of statistics, information theory, signal processing and computational mathematics. He received his Ph.D. in statistics from Stanford in 1998. Candès has received several awards including the Alan T. Waterman Award from NSF, which is the highest honor bestowed by NSF to early-career scientists, and the MacArthur Fellowship, popularly known as the ‘genius award’. He has given over 90 plenary lectures at major international conferences, not only in mathematics and statistics but in many other areas as well including biomedical imaging and solid-state physics. He was elected to the National Academy of Sciences and to the American Academy of Arts and Sciences in 2014. He received the 2020 Princess of Asturias Award for Technical and Scientific Research.