Speaker: Qingyuan Zhao (University of Cambridge)

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Title: Design: The Elusive Principle of Statistics

Abstract:
Experimental design was introduced nearly a century ago and embodied the dawn of modern statistics. Today, design is more broadly understood as the process of data collection/preparation and is intimately related to the concept of causal identification. Strikingly, design is largely missing in the current development and discussion of AI. I will share some stories based on research from my group and collaborations, in the hope that they will help to promote the awareness of design in the interdisciplinary field of data science. The research works I will discuss range from applied analyses of COVID-19, policing, and biodiversity conservation to theoretical foundations of randomized experiments and causal graphical models, but they share one common theme: design trumps analysis.