THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

Statistics Colloquium

NIHAR B. SHAH
Departments of Machine Learning and Computer Science
Carnegie Mellon University

Peer Review, Biases, and Statistics

MONDAY, April 18, 2022, at 4:30 PM, via Zoom
Zoom information will be provided via our weekly email announcement.

ABSTRACT

Peer review is a cornerstone of scientific research, used to evaluate papers as well as award billions of dollars of grants. However, it suffers from various challenges including different kinds of biases. This talk will focus on certain statistical challenges therein and will comprise three parts.

(Part 1) Feedback bias: Real-world systems rely on feedback about their performance for their continual improvement. A useful means of obtaining feedback about the peer-review process is to ask authors' opinions. However, author opinions are significantly biased by whether their paper was accepted. We formulate this problem and present algorithms, with statistical guarantees, to debias such feedback. Our work relies on the key observation that the direction of this bias is known: the program chairs know which authors' papers were accepted.

(Part 2) Author-identity bias: Many peer-review venues are debating policies of hiding author identities from reviewers since revealing these identities could bias reviewers. We will first describe a noteworthy experiment by Tomkins, Heavlin and Zhang to test for such biases in peer review. With this context, we will then focus on the challenges in the design of such experiments (such as circumventing non-random reviewer assignments) and work on addressing these challenges.

(Part 3) Other directions: Finally, we will also discuss a variety of important open statistical challenges in peer review. An overview of challenges and computational solutions in peer review is available here: http://bit.ly/PeerReviewOverview

Bio: Nihar B. Shah is an Assistant Professor in the Machine Learning and Computer Science departments at Carnegie Mellon University (CMU). His research interests span statistics, machine learning, information theory, and game theory. His recent work focuses on improving the peer-review process by designing computational methods, mathematical guarantees, experimental evaluations and deployments, and has had significant real-world impact. He is a recipient of a Google Research Scholar Award 2021, an NSF CAREER Award 2020-25, the 2017 David J. Sakrison memorial prize from EECS Berkeley for a "truly outstanding and innovative PhD thesis", the Microsoft Research PhD Fellowship 2014-16, the Berkeley Fellowship 2011-13, the IEEE Data Storage Best Paper and Best Student Paper Awards for the years 2011/2012, and the SVC Aiya Medal 2010, and has supervised the Best Student Paper at AAMAS 2019.

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