THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS
Colloquium Series

4:00 PM, Thursday, October 6, 2022, via Zoom
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When Will You Become the Best Reviewer of Your Own Papers? A Truthful Owner-Assisted Scoring Mechanism

In 2014, NeurIPS received 1,678 paper submissions, while this number increased to 10,411 in 2022, putting a tremendous strain on the peer review process. In this talk, we attempt to address this challenge starting by considering the following scenario: Alice submits a large number of papers to a machine learning conference and knows about the ground-truth quality of her papers; Given noisy ratings provided by independent reviewers, can Bob obtain accurate estimates of the ground-truth quality of the papers by asking Alice a question about the ground truth? First, if Alice would truthfully answer the question because by doing so her payoff as additive convex utility over all her papers is maximized, we show that the questions must be formulated as pairwise comparisons between her papers. Moreover, if Alice is required to provide a ranking of her papers, which is the most fine-grained question via pairwise comparisons, we prove that she would be truth-telling. By incorporating the ground-truth ranking, we show that Bob can obtain an estimator with the optimal squared error in certain regimes based on any possible ways of truthful information elicitation. Moreover, the estimated ratings are substantially more accurate than the raw ratings when the number of papers is large and the raw ratings are very noisy. Finally, we conclude the talk with several extensions and some refinements for practical considerations. This is based on arXiv:2206.08149 and arXiv:2110.14802.

About the Speaker

Weijie Su is an Associate Professor in the Wharton Statistics and Data Science Department and, by courtesy, in the Department of Computer and Information Science, at the University of Pennsylvania. He is a co-director of Penn Research in Machine Learning. Prior to joining Penn, he received his Ph.D. from Stanford University in 2016 and his bachelor's degree from Peking University in 2011. His research interests span privacy-preserving data analysis, optimization, high-dimensional statistics, and deep learning theory. He is a recipient of the Stanford Theodore Anderson Dissertation Award in 2016, an NSF CAREER Award in 2019, an Alfred Sloan Research Fellowship in 2020, the SIAM Early Career Prize in Data Science in 2022, and the IMS Peter Gavin Hall Prize in 2022.