

Department of Statistics Seminar Series

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Incentive-compatible forecasting competitions

Wednesday, November 12th, 2025

12:10-1:30 PM

Hill 552

Zoom Meeting: Meeting ID: 983 2864 8232

Password: 665123

<https://rutgers.zoom.us/j/98328648232?pwd=gcHifQ9OouKZnUY0EHLe8sjNXaV1oj.1>

Light refreshments will be served in Hill 452, 11:40am

Abstract:

I will describe the first forecasting competition mechanism that both (1) incentivizes forecasters to report truthfully and (2) awards the prize to the best forecaster. The mechanism, called the Event Lotteries Forecasting Competition Mechanism (ELF) is incentive compatible when the predicted events are independent, and it selects the best forecaster with probability approaching 1 as the number of events grows. ELF is easy to implement and can be generalized to the related problems of outputting a ranking over forecasters and hiring a forecaster with high accuracy on future events. I will show how other natural mechanisms, including scoring rules and wagering mechanisms, fail. Next, I will describe BNELF, a version of ELF that works more generally for arbitrarily correlated events. Our mechanism works for any event structure that can be represented as a decomposable Bayesian network (BN), an assumption that is without loss of generality, since any joint distribution can be represented as a BN, and any BN can be made decomposable. We first show that ELF is truthful for any two events, regardless of correlation. We next show that a previous counterexample for correlated events is circumvented if forecasters can update their beliefs over time. We then create a new counterexample of only three correlated events showing that ELF fails even if forecasters can update. Finally, we design BNELF, a mechanism that is truthful for any structure of correlation represented as a decomposable BN (e.g., a tree or join tree).

Bio:

David Pennock is Professor in the Computer Science Department at Rutgers University and Director of the DIMACS math and computing research center. His research focuses on designing intelligent markets for information extraction, often combining human and machine intelligence. He seeks designs with a strong game-theoretic grounding, a significant data-driven component, and a promise of practical deployment to improve society or create a new business. He initiated the fields of combinatorial prediction markets and truthful wagering mechanisms. In addition, he was an early innovator in recommender systems, web analysis, and sponsored search. Four of his papers have won Test of Time awards or mentions in the fields of information retrieval, opinion extraction, search advertising, and decision making. Pennock's Ph.D. is in artificial intelligence and he has been an intellectual and organizational leader in the economics and computation subfield of AI for almost two decades. Over that time, he has co-founded two research areas, three workshops, and an ACM journal, and was a founding member of three corporate basic-research labs. He led Microsoft Research NYC as Assistant Managing Director for six years.