



SCHOOL OF INFORMATICS, COMPUTING, AND ENGINEERING

COMPUTER SCIENCE COLLOQUIUM SERIES



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Luddy 1106

Learning about Agents and Mechanisms from Opaque Transactions

Abstract: In this talk I will discuss the problem of trying to learn the requirements and preferences of economic agents by observing the outcomes of an allocation mechanism whose rules you also don't initially know. As an example, consider observing web pages where the agents are advertisers and the winners are those whose ads show up on the given page. We know these ads are placed based on bids and other constraints given to some auction mechanism, but we do not get to see these bids and constraints. What we would like to do is from repeated observations of this type to learn what the requirements and preferences of the agents are. Or consider observing the input-output behavior of some scheduling service, where the input consists of a set of agents requesting service, and the output tells us which actually received service and which did not. In this case, we assume the agents who did not receive service were not served due to overlap of their resource needs with higher-priority requests. From such input-output behavior, we would like to learn the underlying structure. Our goal will be from observing a series of such interactions to try to learn both the needs and preferences of the agents and perhaps also the rules of the allocation mechanism. This talk is based on work joint with Yishay Mansour and Jamie Morgenstern, as well as work joint with Michael Liang.

Biography: Avrim Blum received his BS, MS, and PhD from MIT in 1987, 1989, and 1991 respectively. He then served on the faculty in the Computer Science Department at Carnegie Mellon University from 1992 to 2017. In 2017 he joined the Toyota Technological Institute at Chicago (TTI-Chicago) as Chief Academic Officer. Prof. Blum's main research interests are in Theoretical Computer Science and Machine Learning, including Machine Learning Theory, Approximation Algorithms, Algorithmic Game Theory, and Database Privacy, as well as connections among them. Some current specific interests include multi-agent learning, multi-task learning, semi-supervised learning, and the design of incentive systems. He is also known for his past work in AI Planning. Prof. Blum has served as Program Chair for the IEEE Symposium on Foundations of Computer Science (FOCS) and the Conference on Learning Theory (COLT). He has served as Chair of the ACM SIGACT Committee for the Advancement of Theoretical Computer Science and on the SIGACT Executive Committee. Prof. Blum is recipient of the AI Journal Classic Paper Award, the ICML/COLT 10-Year Best Paper Award, the Sloan Fellowship, the NSF National Young Investigator Award, and the Herbert Simon Teaching Award, and he is a Fellow of the ACM



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