

ASSOCIATION FOR COMPUTING MACHINERY LECTURE SERIES IN MEMORY OF NATHAN KRASNOPOLER

Algorithms with Predictions in Scheduling

The area of algorithms with predictions, or learning-augmented algorithms, considers the setting where an algorithm is given advice in the form of predictions, such as from a machine learning model. For example, when scheduling jobs, one could obtain a prediction of each job's service time. Queueing systems present many opportunities for applying learning-augmented algorithms, raising numerous open questions about how predictions can be effectively leveraged to improve scheduling decisions. Several recent studies have started the exploration of queues with predicted service times instead of exact ones, typically aiming to minimize the average time a job spends in the system. We review this recent work, highlighting the potential effectiveness of predictions and providing a collection of open questions regarding the performance of queueing systems using predictions. We also provide some comments on applications of predictions for scheduling for large language model systems.

Tuesday, September 9, 2025
10:30 a.m. to Noon
B-17 Hackerman Hall
cs.jhu.edu



Michael Mitzenmacher
Harvard University

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