# A Holistic View on Machine Learning for Systems

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**Abstract:** Improving computer system performance and resource efficiency are long-standing goals. Recent approaches that use machine learning methods to achieve these goals rely on a predictor that predicts the latency, throughput, or energy consumption of a sub-computation to, for example, aid hardware resource management or scheduling. In this talk, I will present a holistic view on machine learning for systems. I will demonstrate that maximizing machine learning prediction accuracy does not always optimize system behavior. Instead, my research vision focuses on a holistic view on machine learning for systems. The key insight in achieving this vision is understanding the cost structure of systems problems and then making proper tradeoffs between different steps within the process. Based on this vision, I will introduce a couple of machine learning for systems solutions to meet different system goals such as energy and performance. I will conclude the talk with my future directions.

**Bio:** Yi Ding is an NSF Computing Innovation Fellow and Postdoctoral Associate at MIT CSAIL. Her research interests focus on co-designing machine learning and systems approaches that enhance computer system performance and resource efficiency. She is a recipient of 2020 CRA/CCC/NSF Computing Innovation Fellowship, a Rising Stars in EECS Workshop participant, and a recipient of Meta Research Award. Before MIT, she received her PhD in computer science from the University of Chicago. Website: https://y-ding.github.io/.

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