Interactive Learning and Decision Making with Machines and People

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Host: Vladimir Kolmogorov

How can we intelligently acquire information for decision making, when facing a large volume of data? In this talk, I will focus on learning and decision making problems that arise in robotics, scientific discovery and human-centered systems, and present how we can develop principled approaches that actively extract information, identify the most relevant data for the learning tasks and make effective decisions under uncertainty. As an example, I will introduce the optimal value of information problem for decision making, and show that for a large class of adaptive information acquisition problems that are known to be NP-hard, one could devise efficient surrogate objectives that are amenable to greedy optimization, while still achieving strong approximation guarantees.I will further talk about a few practical challenges in real-world decision-making systems such as complex constraints, complex action space, and rich interfaces. More concretely, I will elaborate on how to address these practical concerns through a variety of applications, ranging from sequential experimental design for scientific discovery to interactive machine teaching for human learners.

Monday, March 4, 2019 09:00am - 10:00am
Mondi Seminar Room 2, Central Building