Machine Learning for Interactive Systems: Practical Challenges and Opportunities

Ashish Kapoor  Jason Williams
Dan Bohus      Lihong Li
Ece Karmar

Microsoft Research
Beyond prediction

Representation, predictions, ...

perception

action

world
ML for interactive systems

**Machine learning**
- Reinforcement learning
- Multi-armed bandits
- Active learning
- ...

**Interactive systems**
- Robotics & control
- Computer game playing
- Human-machine interaction
- Conversational systems
- Intelligent assistive agents
- Autonomic computing
- Adaptive medical treatment
- Education
- Smart homes
- Online services (search, advertising, recommendation)

**Challenges**
- Non-IID nature of data
- Exploration vs. exploitation
- Offline evaluation
- ...

...
The session

Dan Bohus
MSR

David Traum
USC

Michael Littman
Brown

Leon Bottou
MSR