Contextual Reinforcement Learning

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Abstract:

I will discuss a decade long research project to create the foundations of reinforcement learning with context (aka features). This research project has multiple threads including Contextual Bandits, Learning to Search, and Contextual Decision Processes. The most mature of these (Contextual Bandits) is now driving many real-world RL applications while the least mature (CDPs) is a fascinating theoretician’s toy.

Biography:

John Langford is a machine learning research scientist, a field which he says "is shifting from an academic discipline to an industrial tool". He is the author of the weblog hunch.net and the principal developer of Vowpal Wabbit. John works at Microsoft Research New York, of which he was one of the founding members, and was previously affiliated with Yahoo! Research, Toyota Technological Institute at Chicago, and IBM's Watson Research Center. He studied Physics and Computer Science at the California Institute of Technology, earning a double bachelor's degree in 1997, and received his Ph.D. in Computer Science from Carnegie Mellon University in 2002. He was the program co-chair for the 2012 International Conference on Machine Learning.