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*Online Stochastic Optimization and game theory: beyond convexity*

Online Stochastic Optimization (OSO) is a class of problems that capture decision making under uncertainty. The algorithm has to make real time decisions as it sees new input without knowing future arrival. Some mild stochastic assumptions about the input such as random arrival order can give near optimal algorithms for a broad class of problems.

We have known how to solve OSO with convex constraints and objectives for a few years now. I will show how game theoretic considerations lead to formulations that are beyond convexity, and present a few solutions.