



Department of Decision Sciences
Statistics Seminar

Variations on the Expected Improvement

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12:30 pm Room 3-E4-SR03 Via Roentgen 1 Milano

Abstract

Bayesian global optimization has become a popular approach to tackle non-convex problems when the number of evaluations is drastically limited. In Bayesian optimization, a prior probability distribution is put onto a space of functions to which the objective function is assumed to belong, and this distribution is sequentially updated as new evaluation results are assimilated. In this presentation we will give an introduction to the class of "Expected Improvement" algorithms, and review a selection of classical and more recent results. In particular, we will review decision-theoretic foundations of the Expected Improvement criterion, and show how they can be revisited in order to address a number of challenges (noisy measurements, distributed computing, finite time horizon, etc.). We will also briefly touch upon convergence properties of such algorithms, and discuss about some recent extensions and current bottlenecks.