March 7th, 2022
Zoom Meeting
4:00 P.M. - 5:00 P.M.

Prof. Zuoquan Xu
(Hong Kong Polytechnique University)

State-dependent temperature control for Langevin diffusions

Abstract: We study the temperature control problem for Langevin diffusions in the context of non-convex optimization. The classical optimal control of such a problem is of the bang-bang type, which is overly sensitive to errors. A remedy is to allow the diffusions to explore other temperature values and hence smooth out the bang-bang control. We accomplish this by a stochastic relaxed control formulation incorporating randomization of the temperature control and regularizing its entropy. We derive a state-dependent, truncated exponential distribution, which can be used to sample temperatures in a Langevin algorithm, in terms of the solution to an HJB partial differential equation. We carry out a numerical experiment on a one-dimensional baseline example, in which the HJB equation can be easily solved, to compare the performance of the algorithm with three other available algorithms in search of a global optimum.

Zoom link:
Topic: USC Math Finance Colloquium
Time: Mar 7, 2022 04:00 PM Pacific Time (US and Canada)

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