ACMS Applied Math Seminar

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Thursday, September 28, 2023
154 Hurley Hall
3:30 PM – 4:30 PM

Optimal Control on Graph:
Transition Paths and Mean-field Games

We first formulate the transition path problem for Markov chain as a stochastic optimal control problem in an infinite time horizon. Using the Girsanov transformation for pure jump process on general standard Borel space, we choose the certain relative-entropy type running cost and a terminal cost for the stochastic optimal control problem with a stopping time. We prove the discrete committor function gives an optimal control which drives the transition between local minimums efficiently. Indeed, disintegration formula puts both finite time and infinite time optimal control into one framework. We also use the same entropy type running cost to formulate the mean-field game on graph as a deterministic optimal control problem, whose existence is ensured via a convex reformulation.