1139-68-664   **Mengdi Wang*** (`mengdiw@princeton.edu`), 302 Trinity Ct Apt 2, Princeton, NJ 08540.
Compressive Learning for Sequential Decision Process.

Model reduction has been a central problem in system management and data science. This talk presents a data-driven methodology for learning reduced-order representations of stochastic decision process. In particular, we develop a tractable method for state compression of Markov processes. The state compression method is able to " sketch" a black-box system from its empirical data, for which we provide both minimax statistical guarantees and scalable computational tools. We demonstrate applications of state compression in modeling taxi-trip data and clinical pathways. Furthermore, the state compression method applies to high-dimensional reinforcement learning and policy imitation. It helps decision makers take advantages of past experiences and significantly reduces the complexity of learning to perform a new task. (Received February 20, 2018)