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*Existence and Discrete-Time Approximations of Optimal Controls for Controlled Diffusions under General Information Structures*

In this talk, we present existence and discrete-time approximation results on optimal control policies for continuous-time stochastic control problems under a variety of information structures. These include fully observed models, partially observed models and multi-agent models with decentralized information structures. While there exist comprehensive existence and approximations results for the fully observed setup in the literature, few prior research exists on discrete-time approximation results for partially observed models. For decentralized models, even existence results have not received much attention except for specialized models and approximation has been an open problem. Our existence and approximations results lead to the applicability of well-established partially observed Markov decision processes and the relatively more mature theory of discrete-time decentralized stochastic control to be applicable for computing near optimal solutions for continuous-time stochastic control.

This talk is based on joint work with Serdar Yüksel.