DEPARTMENT OF MECHANICAL ENGINEERING
WILLIAM MAXWELL REED SEMINAR SERIES

Data-Driven Adaptive Optimal Control and its Applications

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Abstract: In many industrial applications, constructing an accurate model from physical laws is a hard and time-consuming undertaking, which makes traditional model-based control approaches impractical. With the recent development of information science and technologies, scientists and engineers are actively seeking efficient ways to develop data-driven intelligent control systems that are highly robust, adaptive, scalable to uncertain or unknown environments. Adaptive dynamic programming (ADP) is a practically sound data-driven, non-model-based approach for control design in complex systems. In this talk, I will introduce a novel framework of adaptive optimal control by ADP. This framework can be employed to address different control problems, including output regulation, cooperative control and output-feedback control of linear and nonlinear dynamical systems. I will also present its applications to intelligent transportation systems, especially connected vehicles and autonomous vehicles. The future research challenges and opportunities in this area will be discussed as well.

Biography: Weinan Gao is a Ph.D. candidate in the Department of Electrical and Computer Engineering and Control and Networks (CAN) Laboratory at New York University (NYU). He received his BS and MS degrees in Control Engineering from the Northeastern University of China. His research interests include data-driven control and optimization, reinforcement learning, adaptive dynamic programming (ADP), and their applications to cyber physical systems, unmanned aerial vehicles and distributed robotics. Through his involvement with Mitsubishi Electric Research Laboratory (MERL) and Center of Urban Science and Progress (CUSP), he proposed multiple data-driven adaptive optimal control methods and implemented them on the connected vehicles and autonomous vehicles. He is the recipient of a NYU Tandon School of Engineering Provost Scholarship and China Graduate Scholarship. He has experience teaching a wide range of courses in both the electrical and mechanical engineering at NYU.

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Date: March 6, 2017

Time: 3:00pm

Place: CB 110

Contact: Dr. Alexandre Martin 257-4462

Meet the speaker and have refreshments
Attendance open to all interested persons

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