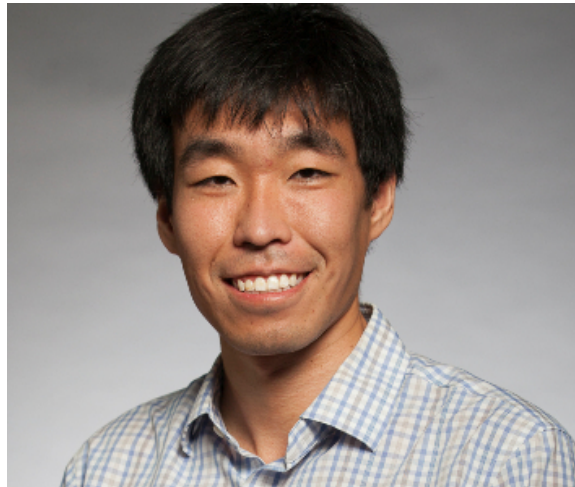


Energy and Power Group

Weekly Seminar Series

Friday, January 24, 2019, 9:10 a.m. – 10:10 a.m., ETB 1020

Optimal Control via Neural Networks: a Convex Approach



Baosen Zhang

Keith & Nancy Rattie Endowed Career Development Professor,
University of Washington

Abstract

In this talk we bridge the gap between model accuracy and control tractability faced by neural networks, by explicitly constructing networks that are convex with respect to their inputs. We show that these input convex networks can be trained to obtain accurate models of complex physical systems. Then optimal controllers can be achieved via solving a convex model predictive control problem. Applications on building HVAC control and distribution system voltage regulation show the promise of our approach compared with existing methods as well as purely data-driven solutions.

Biography

Baosen Zhang is the Keith & Nancy Rattie Endowed Career Development Professor in the department of Electrical Engineering at the University of Washington. He received his undergraduate degree in engineering science from the University of Toronto in 2008; and the Ph.D. degree in Electrical Engineering and Computer Science from University of California at Berkeley in 2013. Before joining UW, he was a postdoctoral scholar at Stanford University.