

Exploiting Symmetry in Large-Scale Optimization and Control Webinar

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Date of Webinar: Wednesday, March 24, 2021

Time: Noon – 1:00 PM MT

Abstract

This talk will present theoretical and algorithmic results on exploiting symmetry to reduce the computational complexity large-scale control and optimization problems. First, we will show how symmetry can be used to reduce the memory complexity of explicit solutions of optimization problems. Second, we will show how symmetry can be used to reduce the memory and computational complexity of an alternating direction method of multipliers (ADMM) optimization algorithm. These techniques will be demonstrated for two applications: network balancing and heating, ventilation, and air-conditioning (HVAC).

Speaker Bios



Claus Danielson joined the Department of Mechanical Engineering at the University of New Mexico as an Assistant Professor in August 2020. He received his Doctorate in 2014 from the Model Predictive Control Laboratory at the University of California, Berkeley. He received his Masters and Bachelor of Science in mechanical engineering from Rensselaer Polytechnic Institute and the University of Washington, respectively. For the past six years, he has been a Principal Research Scientist at Mitsubishi Electric Research Laboratories in Cambridge, MA. His research interests are in motion planning and constrained control. His specialty is developing methods for exploiting structure in large-scale or complex planning, control, and optimization problems. He has applied his research to a variety of fields include autonomous vehicles, robotics, spacecraft guidance and control, heating ventilation and air conditioning, energy storage networks, adaptive optics, atomic force microscopy, and cancer treatment.