Contribution ID: **37** Type: **Minisymposium Contribution**

A Greedy Algorithm for Efficient Learning of Control Systems

Monday, August 12, 2024 3:00 PM (30 minutes)

The efficiency of training data is a prominent issue in machine learning. While too little data can lead to insufficient learning, too much data can result in overfitting or can be computationally expensive to generate. In this talk, we investigate a class of greedy-type algorithms that have previously proven to compute efficient control functions for the reconstruction of operators in dynamical systems. We introduce an adapted version of these algorithms to learn the control-to-state map of a dynamical system by the means of a neural network. The main goal of this strategy is to make the trained network robust with respect to the input control functions, while using the least amount of training data. We demonstrate the efficiency of this method by numerical experiments.

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Session Classification: MS 01: Optimal Control and Machine Learning

Track Classification: Minisymposia: MS 01: Optimal Control and Machine Learning