Data-driven predictive control with stability guarantees

Monday, August 12, 2024 2:00 PM (30 minutes)

Extended Dynamic Mode Decomposition is a popular data-driven method to approximate the flow of a dynamical control system through the lens of observable functions. In this talk, we discuss how this framework and corresponding finite-data error bounds may be used in data-driven Model Predictive Control to establish (practical) asymptotic stability. The key ingredient are proportional error bounds vanishing at the origin, which may be utilized to show that important system-theoretic properties, such as cost controllability, carry over to the data-driven model, if a sufficient amount of samples is chosen.

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