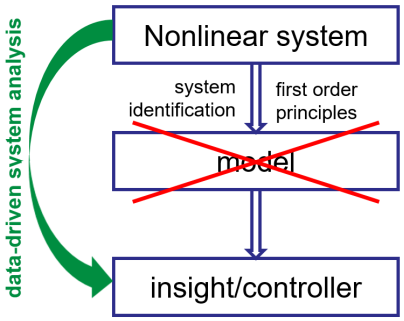
Universität Stuttgart
Institut für Systemtheorie und Regelungstechnik
Prof. Dr.–Ing. Frank Allgöwer

Open Thesis (SA,MA)

Data-driven dissipativity verification of nonlinear systems

Description:



Usually, controller design requires a sufficiently precise model to apply control design techniques. However, the identification of systems are in general time consuming and difficult. Hence, the interest on data-driven controller design techniques, where the controller is deduced without knowledge of a model but directly from measured data of the system, rises. For that reason, we examine the determination of dissipativity properties of unidentified nonlinear systems as these system properties facilitate a controller design without knowledge of the system.

Recently, we considered a data-based set-membership representation of nonlinear systems with polynomial dynamics to derive computationally tractable conditions to verify dissipativity properties from noisy input-state measurements. Subject of this project will be the extension of this framework for input-output measurements.

Prerequisites:

- Backround and interests in systems and control
- Fun with theoretical work
- Experience with Matlab is desired

Supervisor:

Tim Martin
Room 2.236

Area:

Data-driven system analysis

Properties:

Type: SA,MA

30% literature
50% theory
20% simulation

Beginning:

any time

Weitere Informationen: www.ist.uni-stuttgart.de/lehre/bama

Aushang vom 10. August 2020