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## Data-driven stabilization and safe control of nonlinear systems

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# **Propositions**

accompanying the dissertation

## **DATA-DRIVEN STABILIZATION AND SAFE CONTROL OF NONLINEAR SYSTEMS**

by

**Alessandro LUPPI**

1. A data-driven controller design has the potential to reach superior performance compared to a classical model based solution thanks a direct learning from data.
2. A state feedback controller able to stabilize systems with quadratic nonlinearities can be found directly from measurements with limited information about the system.
3. Sum of square programming is a powerful solution to solve positive definiteness problems.
4. Ensuring safe operation boundaries is critical for many control systems, and it is possible to integrate these requirements directly in a data-driven controller design without adding additional steps.
5. Handling the noise in the data is one of the main difficulties in designing purely data driven solutions.
6. Don't cling to a mistake just because you spent a lot of time making it.