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

Open Project(MA)

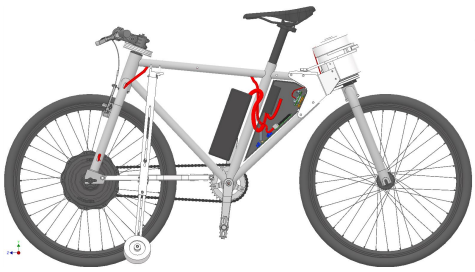
Learning and Control for a Self-Stabilizing Bicycle

Description:

The rear-steered bicycle (RSB) is diffcult for humans to stabilize around its upright position and achieve a steady ride. We have successfully designed several model-based controllers for the RSB over the last few years and we have demonstrated their effectiveness in simulations. However, in order to implement these controllers to stabilize the bike, we need a precise model of the bike. This thesis would involve studying literature on parameter estimation, implementing it on the hardware, and analysing the accuracy of the estimated parameters and the performance of the designed controller. Please don't hesitate to write us an email if you are interested.

Prerequisites:

- Programming experience, e.g., Python, $C++$ or C
- Interest in topics related to system identification, controller design and autonomous vehicles



Supervisor:

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Area:

System Identification
Learning-based Control
Autonomous Vehicles

Properties:

Type: **MA**

20% literature
50% implementation
30% experiments

Beginning:

any time

More information: https://www.ist.uni-stuttgart.de/teaching/bama/

Aushang vom February 14, 2024