Open Thesis (BA, SA, MA)
High Fidelity Modeling of a Rear-Steered Bicycle

**Description:**
A rear-steered bicycle (RSB) is difficult for humans to stabilize around its upright position. There are many controllers that can potentially achieve such a feat. However, a universal and comprehensive model which can be used to verify these controllers in simulation has yet to exist. This thesis would involve studying literature on different effects (e.g. friction or measurement noise) that occur in an RSB-system, creating a model with MATLAB Simscape Multibody and evaluating the model on the real bike in different experiments. Please don’t hesitate to write us an email if you are interested.

**Prerequisites:**
- Experience with MATLAB Simscape Multibody is helpful
- Interest in modeling
- Lectures: *Technische Mechanik III*

**Supervisor:**
D. T schemernjak, J. Venkatasubramanian
Room 2.243, 3.238

**Area:**
Modeling
Autonomous Vehicles

**Properties:**
Type: **BA, SA, MA**
- 30% literature
- 50% implementation
- 20% evaluation

**Beginning:**
anytime

Further information: [www.ist.uni-stuttgart.de/teaching/bama](http://www.ist.uni-stuttgart.de/teaching/bama)

Notice from July 24, 2024