

Modellierung und Simulation technischer Systeme

Systems Modeling and Simulation

Prof. Dr. Kathrin Flaßkamp

Projektseminar / Bachelor-Seminar / Bachelor-Arbeit

Topic: Graph-based modeling of robotic systems

Description: This project studies the representation of complex and continuous systems in the form of a finite automata. With a special focus in robotics systems, for instance autonomous cars, quadcopters, robot navigation system, robotic arms, etc., an example should be implemented and a task should be completed by a graph search algorithm.

Aims:

- Make a literature review on graph-based modeling for dynamical systems
- Describe the techniques to represent continuous-time physics models in graphs
- Study the continuous dynamics quantization to represent control quanta as a graph-based method
- Model a robotic system as a finite automata; Implement a task for this system by means of a shortest paths in graphs algorithm, for example A*

References:

Jordan Jalving, Yankai Cao, Victor M. Zavala: Graph-based modeling and simulation of complex systems, Computers & Chemical Engineering, Volume 125, 2019, Pages 134-154, ISSN 0098-1354, <https://doi.org/10.1016/j.compchemeng.2019.03.009>.

Further Information and Contact:

Matheus Pedrosa, Email: matheus.pedrosa@uni-saarland.de

Prof. Dr. Kathrin Flaßkamp
Professur für Modellierung und Simulation
technischer Systeme
Fachrichtung Systems Engineering

Anschrift:
Campus, Geb. A 5 1, Zi. 1.05
Universität des Saarlandes
66123 Saarbrücken

Email: kathrin.flaskamp@uni-saarland.de
Tel.: +49 681 302 4416 (Sekretariat)