Nicolas Chatzikiriakos

Institute for Systems Theory and Automatic Control, University of Stuttgart

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About me

I am a PhD student at the Institute for Systems Theory and Automatic Control at the University of Stuttgart, where I am advised by Andrea Iannelli. My main research is leveraging statistical learning theory tools for data-driven control. With this, I am particularly interested in quantifying the uncertainty caused by noise in the data and analyzing the statistical hardness of learning dynamical systems.

Education

PhD **Institute for Systems Theory and Automatic Control, University of Stuttgart** — Since Mai 2023

- Advisor: Andrea Iannelli
- Research interest: Uncertainty quantification for data-driven control

M.Sc. **University of Stuttgart**, Engineering Cybernetics — Mar. 2021 – Apr. 2023

- Final Grade: 1.3
- Thesis: *Safe approximation of model predictive controllers using neural networks* (in cooperation with Robert Bosch GmbH)
- Coursework: Robust Control, Optimal control, Model Predictive Control, Data-driven Control

B.Sc. **University of Stuttgart**, Engineering Cybernetics — Oct. 2017 – Mar. 2021

- Final Grade: 1.7
- Thesis: Microscopic modelling and simulation of German highway traffic with regards to string stable cruise control

Experience

Robert Bosch GmbH, Internship — Research Campus, Renningen, Germany, Oct 2021 – Mar 2022

- Development of a direct-switching model predictive control method for the efficient operation of electrical machines
- Development of a modular design of the control structure and its implementation in Matlab/Simulink
- Transfer of the control structure from the simulation environment to Rapid Control prototyping environment (dSPACE)
- Validation of the robustness of the controller on the test bench

Teaching

Organization of IST Honours Course — Since Winter Term 24
Student Laboratory Concepts of Automatic Control — Winter Terms 23 & 24
Student Laboratory Introduction to Automatic Control — Summer Terms 23 & 24

Accepted Publications

Learning soft constrained MPC value functions: Efficient MPC design and implementation providing stability and safety guarantees L4DC 2024

Chatzikiriakos, N.*, Wabersich, K.P.*, Berkel, F., Pauli, P., Iannelli, A.

Proceedings of the 6th Annual Learning for Dynamics & Control Conference 2024

Skills

Languages: German (mother tongue), English (C1), French (B1), Spanish (A2)

Programming Languages: Matlab, Python