Zertifikat

Albert-Ludwigs-Universität Freiburg

UNI FREIBURG

Systems Control and Optimization Laboratory

I hereby confirm the participation of

Dang Viet Anh Nguyen

In the Fall School on

Model Predictive Control and Reinforcement Learning

University of Freiburg, October 6 - 10, 2025

The aim of this 5-day intensive course was to provide both theoretical background and hands-on practical knowledge in Model Predictive Control and Reinforcement Learning. In the first two days, we offered a foundation in both topics, while in the three days week, we delved into more advanced topics related to the combination of the two fields. The course consisted of lectures, computer exercises and a voluntary project.

Topics: Introduction to Reinforcement Learning (RL): Markov Decision Processes (MDP), Dynamic Programming (DP), Value Iteration and Policy Iteration; Dynamic Systems: Simulation, Optimal Control, Linear Quadratic Regulator; Constrained Nonlinear Optimization; Function approximation with Deep Learning; Temporal Difference, Policy gradient and Actor-Critic methods; Synthesis of MPC and RL framework, Theoretical motivations for combining MPC and RL, Safety and Stability in MPCRL, Extension of the MPCRL framework to model-based decision making problems.

A detailed schedule is available at https://www.syscop.de/teaching/ws2025/model-predictive-control-and-reinforcement-learning

Prof. Dr. Moritz Diehl
University of Freiburg

Freiburg im Breisgau, Germany, 16th October 2025

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