

Model Predictive Control and Reinforcement Learning

– Welcome and introduction –

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Fall School on Model Predictive Control and Reinforcement Learning
Freiburg, 6-10 October 2025

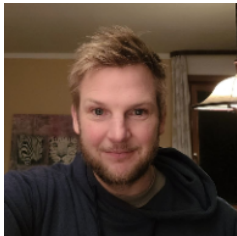
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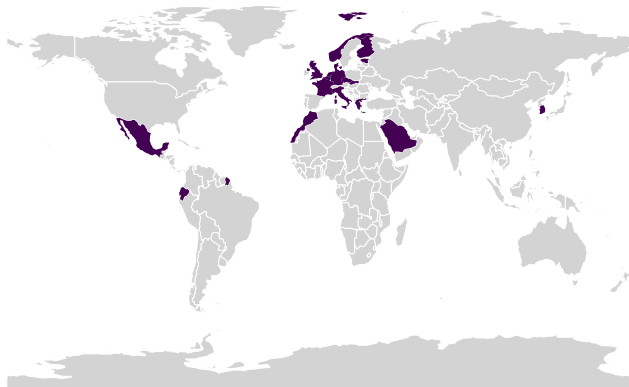
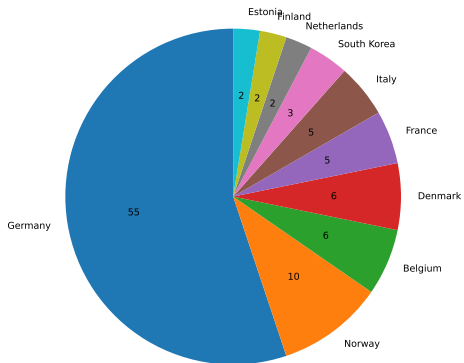
NTNU

Norwegian University of
Science and Technology

The Team



The Participants



The Schedule



Time	Monday 6.10.	Tuesday 7.10.	Wednesday 8.10.	Thursday 9.10.	Friday 10.10.
9:00	Welcome (~10 min) Lecture 1 - Introduction to RL (JB) Markov Decision Process, Dynamic Programming, Bellman Equation, Policy and Value Iteration	Lecture 4 (MD) Constrained Optimization, MPC as a Nonlinear Program; Sensitivity Computation	Lecture 6 - Synthesis of MPC and RL (SG) Overview over Synthesis of MPC and RL	Lecture 8 (SG) RL + MPC Why does it work?	Lecture 10 (SG) ~45min AI for Decision Making Finalize Project Work ~45 min
10:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:00	Lecture 2.1 - Dynamics and Simulation (MD) Lecture 2.2 - Basics in Optimization (MD)	Exercise Acados interface + basic MPC with acados + DiffMPC layer with leap-c	Lecture 7.1 - An MPC prior for SAC (JH, LF) ~45min Lecture 7.2 - Imitation Learning from MPC (AG) ~45min	Project Work / Q&A	Project presentation
12:30	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
14:00	Lecture 3.1 - Temporal difference methods and function approximators (JB) ~45min Lecture 3.2 - Dynamic Programming and LQR (MD) ~45min	Lecture 5 - Actor-Critic Methods (JB) ~1h	Exercise ~1h MPC prior for SAC using leap-c Project pitches & Project start-up ~30min	Lecture 9 (SG) Safety & Stability in MPCRL	Project presentation Final remarks & podium discussion
15:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Farewell Reception
16:00 - 17:30	Project Guidelines ~10 min Exercise: Pytorch basics and DQN	Exercise ~1h Actor-Critic methods Research Spotlight ~30 min	Project Start-Up / Q&A -- end at 16:45/17:00 Shakeout walk! (17:45/18:00)	Project Work / Q&A	
19:00	Welcome reception		Dinner with participants		



- ▶ WiFi connection
- ▶ Electric sockets
- ▶ Lunch options
- ▶ Whatsapp group
- ▶ Leonard's recommendation on Freiburg
- ▶ Exercise session setup