

# Iterative Model Improvement Learning Control for Robot Manipulators

## Projektseminar (2-4 Personen, Homeoffice)

For many control applications, it is advantageous to rely on a quantitative model of the controlled system. This model can be directly used for the control scheme. Unfortunately, such models are always subject to modelling errors that occur due to model complexity and the resulting simplifications during the modelling and system identification procedure.

However, these models can still be used in a model-based control approach and they can be improved in an iterative manner, especially for control systems that execute repetitive tasks. Robotic manipulators are complex systems that often perform such repetitive tasks via model-based control. An improvement of the model is therefore also promising to improve the control performance.

Your tasks will be:

- to inform yourself about robotic manipulators and the control thereof
- implement/simulate an iterative learning control like example [1] and/or machine learning approaches
- Evaluate, compare and present the results



[1] A. Steinhauser and J. Swevers, „Iterative Learning of Feasible Time-optimal Trajectories for Robot Manipulators“, in *IFAC-PapersOnline*, vol. 50(1), July 2017, pp. 12095-12100.

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