

GAMM Workshop on Computational and Mathematical Methods in Data Science (COMinDS)



Contribution ID: 14

Type: **Talk**

Gaussian Process Regression in Learning Control

Thursday, 3 November 2022 13:15 (1 hour)

Gaussian Process (GP) regression is a popular nonparametric and probabilistic machine learning method. Notably, GPs have favorable characteristics for addressing some fundamental challenges that arise when combining learning algorithms with control. After a discussion of these challenges and a short tutorial on GP regression, I will present some of our recent results in GP-based learning control. In particular, I plan to talk about (i) dynamics model learning that incorporates also physical knowledge, (ii) controller optimization that combines simulation and real experiments, and (iii) new GP uncertainty bounds for safe learning. Some of the developed theory will be illustrated through experimental results on robotic hardware.

Primary author: TRIMPE, Sebastian (RWTH Aachen)

Presenter: TRIMPE, Sebastian (RWTH Aachen)