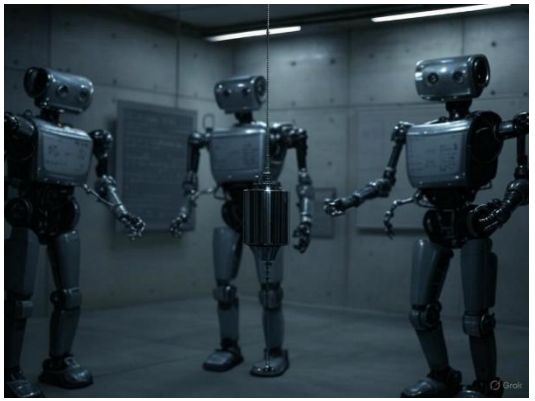
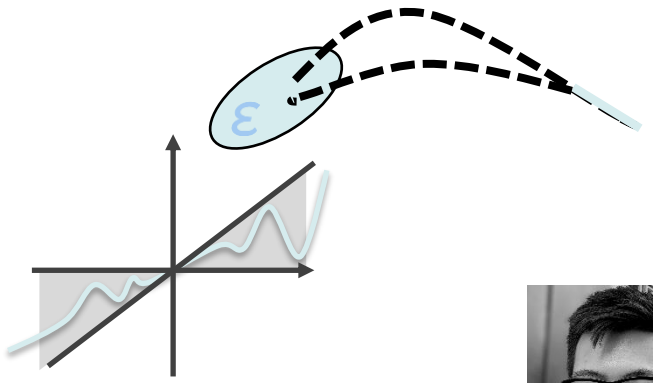
# Data-Efficient Reinforcement Learning using Semidefinite Programming

TECHNISCHE UNIVERSITÄT DARMSTADT

**Master's thesis proposal**

Reinforcement Learning (RL) has garnered significant attention and demonstrated promising outcomes across various applications. However, its reliance on large amounts of data for training and the challenge of ensuring robust constraint satisfaction remain notable limitations. This project seeks to explore an alternative methodology for RL by leveraging convex relaxation techniques to obtain a semidefinite programming problem in form of Linear Matrix Inequalities (LMIs). This approach can potentially enhance data efficiency and facilitate the integration of constraints within the RL paradigm.






Prospective students are expected to have a strong foundational knowledge in Control Theory, Optimal Control, Linear Algebra, and Reinforcement Learning.

Interested students are invited to contact me via email for further details and discussion regarding the project.

The language for discussion and writing is preferably English.

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CCPS Control and Cyber-Physical Systems