Institute for Machine Tools and Industrial Management (*iwb*)
TUM School of Engineering and Design
Technical University of Munich

IDP: Development of a Cost Function for RL-based CAM Planning

Motivation

The quality of CAM planning is often heavily influenced by the experience and intuition of the programmer, making it highly subjective. This thesis aims to reduce that dependency by integrating a reinforcement learning (RL) framework that can optimize CAM strategies automatically. A key component of this is the development of a cost function to objectively evaluate the quality of the generated CAM-based tool paths.

Scope of Work

The goal is to design and implement a cost function that can be used within an RL environment to assess CAM planning results.

The project includes:

- Designing and implementing an evaluation logic
- Integrating an existing external REST API
- Connecting the cost function to an RL framework
- Testing and analyzing results using example processes

Requirements

- Master's degree student in mechanical engineering, computer science, mechatronics, or a related field
- Strong programming skills in Python and experience working with APIs
- Desirable: knowledge of reinforcement learning and CAM systems
- Structured and independent working style

Contact

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Beginning as soon as possible

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