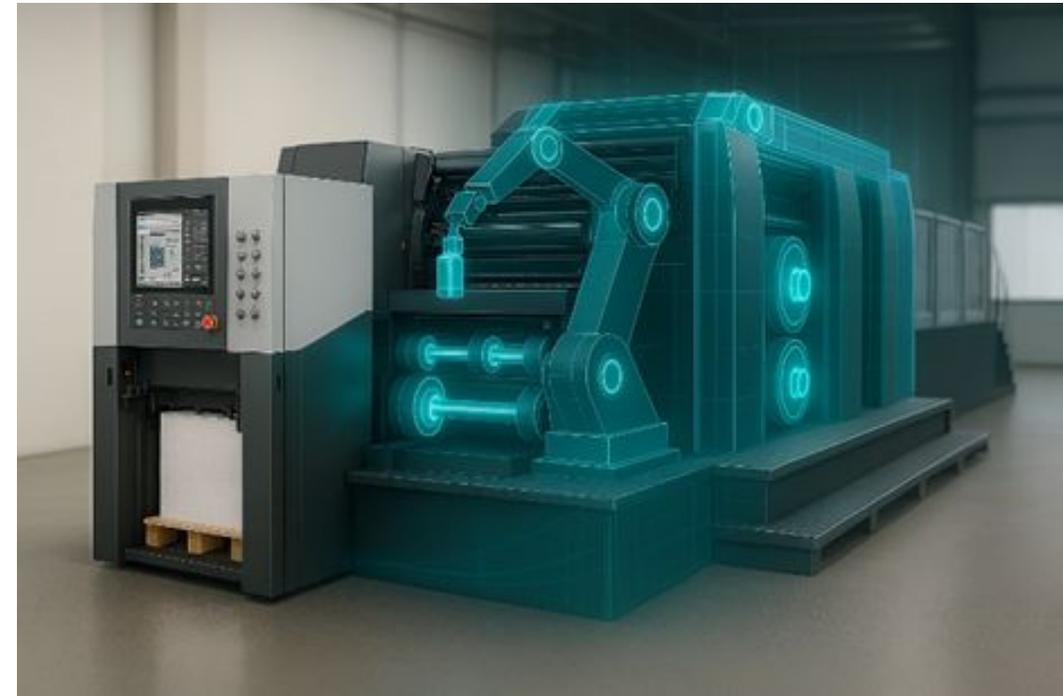NEUROROBOTICS

SIEMENS

TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

Virtual Commissioning of Interpreter Programs for Multi-Axis Applications
(in Cooperation with Siemens)

Industry 5.0 aims to connect humans and machines in a smart and resilient manufacturing landscape, where simulation and digital twins are key strategic enablers for efficiency and sustainability. In this context, virtual commissioning, testing, and quality assurance of control solutions for production machines without access to the real machine environment are becoming increasingly important. A particular focus is the integration of such solutions into established engineering and commissioning toolchains.

The goal of this thesis is to design and implement a concept for the virtual commissioning of interpreter programs for multi-axis applications. The work builds on an existing virtualised control environment for interpreter programs. To extend this environment towards full virtual commissioning capability, the thesis will address the following aspects.

Tasks:

- Model the process behaviour and define suitable test stimuli.
- Visualise and assess axis behaviour in multi-axis applications.
- Define and evaluate test results and acceptance criteria.

The conceptual part of the thesis focuses on developing suitable operator interaction concepts and methods to detect and evaluate the overall motion across all axes. In the practical part, these concepts are integrated exemplarily into the existing environment.

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Requirements:

- Programming skills in C# and C++.
- Ability to work effectively in a team.