

Master Thesis - “Automatic update of the virtual model of a flexible automation cell” (30 credits/20 weeks – 2 students, Jan-May 2023)

Project Background

The manufacturing industries are facing challenges to reuse and adjust production equipment when introducing novel technologies and new products. This emphasizes the importance of resource-efficient and flexible production systems with better utilization of resources and rapid reconfiguration using digital models and virtual commissioning.

This thesis idea aims to investigate how to detect differences between the physical system and the virtual models, analyze the differences and how to update the virtual models of a flexible automation cell in a sustainable manner. The method shall be quick and easy to use. However, we also would like to investigate how to take the next step.

How do we keep our digital twin updated during the lifetime of the cell?

The major problem will be to find out how to update the 3D data in an automatic way. We would like this thesis work to focus on finding a method to automatically create 3D models from the point clouds, if possible. Models that later can be used to update the digital twin.

The assignment offers a unique opportunity to work in a creative environment and this master thesis assignment is a part of the *CLOUDS project*, as a collaboration of University West, Chalmers and GKN Aerospace.

Assignment Description

- Familiarize with the topic
- Investigate which “scanning method” that would be the best for GKN (laser scanning, photogrammetry, ...?)
- Create point clouds from 3D data and document the work needed.
- Investigate which software that is most suitable for working with point clouds and for converting these to CAD geometry.
- Validation and verification of the work
- Document and present results

Qualifications

Student in the final year of their M.Sc. studies in the field of Robotics and Automation or similar with a strong interest in manufacturing, automation, programming and virtual engineering tools.

Contact

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