
Master Thesis Opportunity

AI-Based Optical Quality Control of Laser Surface Structures for Thermal Direct Joining of Metal and Plastics.

Join hyjoin and develop the next generation of intelligent manufacturing systems.

In this thesis, you will develop an AI-driven quality control approach for laser-generated surface structures used in thermal direct joining. By combining computer vision, pattern correlation, and machine learning, you will create methods to automatically assess structure quality and correlate optical features with joining performance.

Your Tasks

- Develop algorithms for optical surface structure inspection
- Apply image processing, pattern correlation, and AI methods
- Analyze and classify laser-generated structures
- Correlate image features with process and joining quality
- Implement software tools for automated quality assessment
- Validate results using experimental manufacturing data

Your Profile

- M.Sc. student in Manufacturing Engineering, Mechanical Engineering, Computer Science, Mechatronics, or a related field
- Interest in production processes and software development
- Experience with AI, machine learning, or computer vision
- Familiarity with image analysis and pattern recognition
- Hands-on mentality and willingness to work with real manufacturing systems
- Programming skills (Python preferred)
- Motivated, independent, and eager to learn
- Excited by the pace and responsibility of a startup environment

What We Offer

- A highly relevant industrial research topic
- Direct impact on innovative manufacturing technology
- Close collaboration with experts in laser processing and joining
- Startup culture with flat hierarchies and fast decision-making
- Flexible start date and room for your own ideas

Location: Munich / Dresden

Company: hyjoin GmbH

Start: Flexible

Interested? Let's build the future of intelligent joining technology together. Send your application to careers@hy-join.com.