Institut für Werkzeugmaschinen und Betriebswissenschaften (*iwb*)
TUM School of Engineering and Design
Technische Universität München

TUM

SA/MA for the Adaptive Repair of Components using Robotic Arc Welding

Current situation

For decades, weld repair has been performed by highly skilled welders. However, labor shortages and increasing workloads drive the industry to seek more cost-effective and efficient solutions, such as robotic welding. Nonetheless, robotic welding still lacks the adaptability and autonomy of the human mind. In this position, AI algorithms will be implemented to enable robotic welding to adapt to the environment, much like a human welder.

Scope of the work

This study aims to enable a welding robot to recognize weld beads and infer tool path parameters for multi-bead deposition. By analyzing weld bead geometries and identifying underlying trends, this research establishes the foundational baseline for a generalized predictive model. The scope of this work is divided equally between experimental investigation and analytical modeling of the weld beads. The predictive model design is not included in this work.
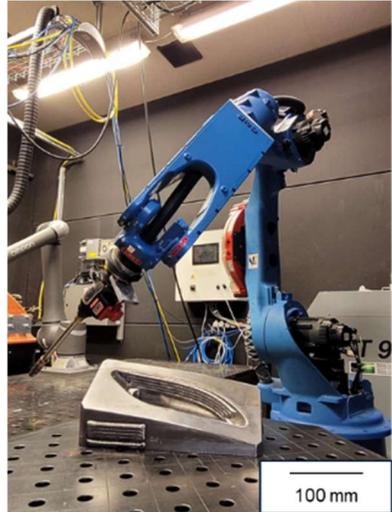
Repair of components using robotic arc welding

Prerequisites

- Outstanding English level or basic German level
- Python programming

Contact

The application must include the CV and the grade report.

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