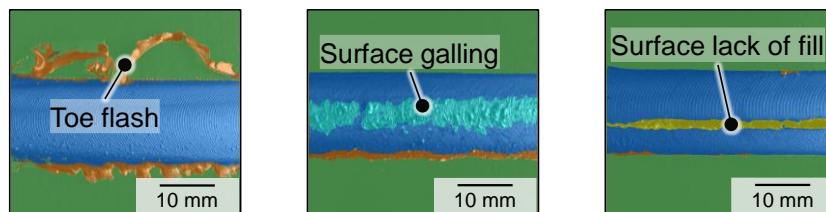


Development of Artificial Neural Networks for Image Segmentation Tasks

Motivation

Friction stir welding (FSW) is an innovative joining process that is becoming increasingly important in the automotive industry. Since defects are easily visible on the weld seam surface, there is a great potential for machine vision applications based on artificial neural networks. In a current research project, image segmentation algorithms are being developed to detect various surface defects:

<https://www.mec.ed.tum.de/en/iwb/research-and-industry/projects/machine-tools/surfsw-automatisierte-visuelle-inspektion-von-ruehrreibschweisssnaechten-bei-raumfahrtgrosstrukturen/>



Weld seam surfaces of friction stir welds with defects.

Scope of work

The project includes the development of neural networks for image segmentation tasks. The challenge of this project is to handle small data sets with unbalanced training data sets. Therefore, methods for handling small data sets have to be applied. The images are already labeled.

Prerequisites

- Proficiency in Python and Machine Learning
- Proficiency in German or English language

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