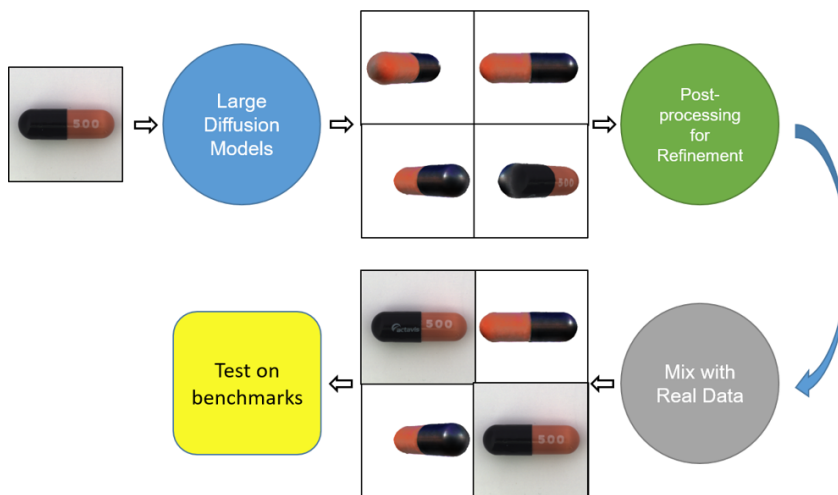


## Bachelorarbeit, Masterarbeit

# Increasing utility of synthetic industrial training data generated by large models

### Motivation

In industry, modeling is a vital part in many aspects including designing, simulation and inspection. AutoCAD, Solidworks, blender and many other commonly used softwares requires however decent preknowledge and experience of the user. Recently, some neural network-based methods are developed for generating 3D models using only 2D images w/o prompts. In industrial scenarios, people expect high quality details and robustness of the 3d model, thus it remains a challenge to apply these methods and increase the quality of the synthetically generated images.



Workflow of this thesis

### Aufgabenstellung

In this thesis you will try to generate some 3D models based using the public industrial dataset, e.g., MVTec-AD and ViSA, into 3D models and then render 2D images from different perspectives of the 3D models. The code base for generation is available. You should meanwhile develop some post-processing steps to increase the quality of generated 2D images. At last, you will test the utility of the refined synthetic images by mixing them with real data and testing them using the SOTA methods.

### Vorkenntnisse

- Knowledge about generative neural networks
- Knowledge about diffusion model
- Experiences with Python programming
- Experiences with anomaly detection would be helpful

### Forschungsgebiet

- Machine Learning

### Studiengang

- ☒ Elektro- und Informationstechnik
- ☒ Informatik

### Ausrichtung

- ☒ Methodenentwicklung
- ☒ Recherche
- ☒ Implementierung
- ☒ Modellierung

### Start

Ab sofort

### Links

[Mitarbeiter](#)

### Ansprechpartner

M.Sc. Muen Jin  
Westhochschule, Hertzstr. 16  
Geb. 06.35, Zimmer 120.3  
muen.jin@kit.edu  
Tel.: (0721) 608 - 44623