# YUNLONG WANG

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## SKILLS

**Languages**: English (Fluent), Germany (C1), Chinese (Native)
**Programming**: Python, C++, MATLAB, Java
**Framework/Packages**: PyTorch/TensorFlow, ROS, MoveIt, Mujoco, Issac NVIDIA, Git, Docker, Latex

## EDUCATION

**Master of Science** | *Informatics* | *1.8 GPA*                    Oct. 2021 – Now
University of Hamburg                                               Hamburg, German

**Bachelor of Engineering** | *Internet of Thing* | *2.2 GPA*       Oct. 2015 – Sep. 2019
Qingdao University of Science and Technology                        Qingdao, China

## WORK EXPERIENCE

**Working Student**                                                 Apr. 2024 – Now
Agile Robot SE                                                      Munich, German

- Build simulation environment for specific robot manipulation task.
- Dataset collection with human teleoperation.
- Optimizing the deep learning models for robot arm control.
- System Integration using ROS and Docker.

**Student Research Assistant**                                      Apr. 2023 – Apr. 2024
University of Hamburg                                               Hamburg, German

- Build simulation environment using two Shadowhand robots and deformable materials in Issac Sim.
- Conduct research on a novel approach of 6D pose estimation.

**Application Engineer**                                            Oct. 2020 – Apr. 2021
Corerain Technology                                                 Shenzhen, China

- Prototypes design and custom's requirement mining.
- API deployment and continue integration of software.

**Compute Vision Engineer**                                         Feb. 2020 – Sep. 2020
Xianchen Technology                                                 Jinan, China

- Continue optimizing deep learning models and maintenance data collection pipeline.
- Deploy API on the edge computing device.

## PUBLICATIONS

**ToolEENet: Tool Affordance 6D Pose Estimation**
Accepted at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024)

# PROJECTS

### Explore Dexterous Robot Tool Use with Diffusion Policy
Master's Thesis

Apr. 2024 - Now
Agile Robot SE

- Build and optimize simulation for imitation learning in Mujoco.
- Collecting multi-modal demonstration datasets using teleoperation.
- Optimizing the performance of multi-modal diffusion policy for motion planning.
- Prompt fine-tuning of Large Language Model for task planning.

### BEV Perception of Autonomous Driving
Self-study project

Apr. 2024 - Now
Hamburg University

- Studied various theories including LSS-based BEV models, Transformer-based BEV models, BEV for occupancy, BEV for mapless navigation, and BEV for end-to-end methods.
- Worked on a course project involving feature space transformation based on IPM, LSS and Transformer, the fusion of BEV spatial features from images and point clouds.
- Gained hands-on experience with deploying deep learning models, covering ONNX model conversion, TensorRT optimization, model quantization, compression, and compilation.
- Additionally, explored advanced algorithms including VoxFormer, TPVFormer, OpenOccupancy, SurroundOcc, Occ3D, and UniAD.

### Simplify Tool Manipulation of Shadowhand based on 6D Pose Estimation
Student Research Project

Apr. 2023 - Apr. 2024
University of Hamburg

- Building Issac Gym simulation environment, annotating and collecting synthesized dataset.
- Optimizing the proposed novel framework for affordance 6D pose estimation.
- System integration of real robots with Shadowhand and UR10e arm, to verify the algorithm's performance.

### Marimbabot, A Robotic Marimba Instrument Player
Master's Project Seminar

Oct. 2022 - Oct. 2023
University of Hamburg

- Collected and annotated datasets to fine-tune the deep learning model for OCR-free music sequence recognition.
- Human speech recognition for robotic command detection.
- MoveIt-based motion planning and task planning with behaviour tree
- Music note detection from the sound signal with signal processing and deep learning model to evaluate the robot's performance.

### Curriculum Learning in Sentiment Analysis
Course Seminar

Oct. 2021 - Apr. 2022

- Implement curriculum learning algorithm with Distil-BERT on sentiment analysis task.
- Conduct comparison experiments with different learning configurations and write a report paper.

### Optimizing the OCR system based on Deep Learning Models.
Bachelor's Thesis

Oct. 2018 - Sep. 2019

- Collect and process annotated dataset for OCR task
- Optimize the Mask-RCNN model for object detection as the first stage of OCR.