



# YUNLONG WANG

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## SKILLS

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**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

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**Master of Science** | *Informatics* | *1.8/1.0 GPA*

University of Hamburg

Oct. 2021 – Now

Hamburg, German

**Bachelor of Engineering** | *Internet of Thing* | *2.2/1.0 GPA*

Qingdao University of Science and Technology

Oct. 2015 – Sep. 2019

Qingdao, China

## WORK EXPERIENCE

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**Working Student**

Agile Robot SE

Apr. 2024 – Now

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**

University of Hamburg

Apr. 2023 – Apr. 2024

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**

Corerain Technology

Oct. 2020 – Apr. 2021

Shenzhen, China

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

**Compute Vision Engineer**

Xianchen Technology

Feb. 2020 – Sep. 2020

Jinan, China

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

## PUBLICATIONS

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**ToolEENet: Tool Affordance 6D Pose Estimation**

Accepted at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024)

## PROJECTS

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### **Explore Dexterous Robot Tool Use with Diffusion Policy**

Apr. 2024 - Now

Master's Thesis

Agile Robot SE

- Build and optimize simulation for imitation learning in Mujoco.
- Developing VR-based teleoperation pipeline for collecting human demonstration dataset.
- 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**

Apr. 2024 - Now

Self-study project

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**

Apr. 2023 - Apr. 2024

Student Research Project

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**

Oct. 2022 - Oct. 2023

Master's Project Seminar

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**

Oct. 2021 - Apr. 2022

Course Seminar

- 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.**

Oct. 2018 - Sep. 2019

Bachelor's Thesis

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