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*** | ***1.8/1.0 GPA*** — Oct. 2021 – Now
University of Hamburg — Hamburg, German

Bachelor of Engineering | ***Internet of Thing*** | ***2.2/1.0 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 based on the mujoco.
- Build dataset collection pipeline with VR-based teleoperation for robot learning.
- 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

- Construct simulation environment with robots hand and deformable objects 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 related to the compute vision deep learning algorithm.
- API deployment and continue integration of software.

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

- Continue optimizing deep learning models for image segmentation and maintenance data collection pipeline.
- Containerize and deploy API on the cloud server and edge devices.

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 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

- Study various theories including, online LSS-based BEV models, offline Transformer-based BEV models, BEV for occupancy, BEV for mapless navigation, and BEV for end-to-end methods.
- Work on a course project involving BEV-transform based on IPM, LSS and Transformer, spatial feature fusion, and temporal feature fusion.
- Gain hands-on experience with deploying deep learning models, ONNX model and TensorRT conversion.
- And explored advanced algorithms including Occupancy-based method and End-to-end method.

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.