ZHIJIE YANG

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EDUCATION

Technical University of Munich October 2020 - February 2024
M.Sc. in Informatics (Informatik)
School of Computation, Information and Technology Grade: 1.6/1.0
Thesis: "Dimensionality Reduction for Self-Supervised Learning"

ShanghaiTech University August 2016 - July 2020
B.Eng. in Computer Science and Technology
School of Information Science and Technology
Thesis: "Super Accuracy Mapping"

TECHNICAL STRENGTHS

Programming Languages: Python, C++, C, Java, MATLAB, RISC-V, MIPS
DevOps: Git, Docker, CI/CD(Jenkins, Gitlab CI, Github Action), Packaging(Snapcraft)
Systems: Robot Operating System (ROS) and Linux
Machine Learning Tools: PyTorch, NumPy, SciPy, TensorFlow
Electric Engineering: Multisim and Ultiboard
CAD and CAM Software: SOLIDWORKS and SolidCAM

WORK EXPERIENCE

Canonical Ltd. March 2024 - Present
· Software engineer on rocks.
· Goals: DevOps for toolchains that build and distribute Ubuntu-based OCI images. Tech stack: Docker, OSCAP, GitHub Workflow, Juju, Charm, Snapcraft, Rockcraft, MicroK8s.

TUM School of Management August 2022 - September 2023
· Research assistant (HiWi) on project MILAS.
· Goals: Implementation of heuristic algorithms resolving strategic and operational problems in the electrifying transformation of autonomous E-shuttle services. The new algorithm exceeds the performance of existing ones in certain cases. [i]

Cartken Inc. November 2022 - April 2023
· Internship, deep learning engineer, TUM interdisciplinary project (IDP).
· Goals: Implementation of deep learning-based localization algorithms for autonomous delivery robots.
· Achievements: A fully functioning deep neural architecture that determines the ego-pose of the robot given the task map and the map of the locally observed environment, with sub-meter localization error.

SenseTime March 2021 - September 2021
· Working student, autonomous driving system engineer
· Goals: 1° Development of middleware adapters, system monitor and system daemon; 2° Involving in the automated testing and deployment of autonomous driving system and functional modules; 3° Conduct of field tests.
· Achievements: 1° Halved the boot time of the autonomous driving system; 2° More detailed node status monitoring and more user-friendly terminal interfaces; 3° Enabling the system to restore the software setups according to the recorded clips fully.

[i] https://www.milas-ladesystem.de/index.html

THESIS AND RESEARCH PROJECTS

Dimensionality Reduction for Self-Supervised Learning
- This master thesis aims at training the backbones of deep neural networks fully self-supervised, combining the techniques of contrastive learning and stochastic neighborhood embedding to leverage dimensionality reduction as supervision for self-supervised learning.
- Advisor: Dr. Ekim Yurtsever [iii]; Supervisor: Prof. Dr.-Ing. Alois Knoll. [iv]

3D Object Detection with a Self-supervised Lidar Scene Flow Backbone
- This project uses scene-flow estimation as a pre-text task to train the 3D object detection network with self-supervision. Major contribution: A literature review of scene-flow methods and the implementation of scene-flow networks with PyTorch and MMDetection3D.
- Advisor: Dr. Emec Ercelik [ii], Dr. Ekim Yurtsever[iii]; Supervisor: Prof. Dr.-Ing. Alois Knoll.[iv]
- Published as oral paper in ECCV 2022.

Towards Generation and Evaluation of Comprehensive Mapping Robot Datasets
- This project consists of building an autonomous robot with various heterogeneous sensors to precept the surroundings and generating datasets for SLAM algorithm benchmarks and experiments. Major contribution: Construction of the sensor and upper computer systems, including high throughput image compression implementation.
- Supervisor: Prof. Dr. Sören Schwertfeger [v].
- Published as papers in ICRA 2019 workshop and Robotics and Autonomous Systems.[vi][vii]

Mapping with Reflection – Detection and Utilization of Reflection in 3D Lidar Scans
- This project aims at detecting the reflective surfaces with 3D LiDAR and using it to map the back side of objects. Major contribution: Implementation of the algorithm in C++ and conduct of the experiments.
- Supervisor: Prof. Dr. Sören Schwertfeger [v].
- Published as contribution paper in SSRR 2020. [viii]

LANGUAGES

Chinese Mandarin	Native proficiency
English	Full professional proficiency
German	B2

HOBBIES AND INTERESTS

My hobbies and interests include photography, road trips, Alpine and cross-country skiing, track driving (karts and touring cars), and cooking. I used to develop monochrome films by myself. I also service my car in my garage during holidays to gain a deeper understanding and connection.

[ii] https://www.ce.cit.tum.de/air/people/emec-ercelik-msc/
[iii] https://people.engineering.osu.edu/people/yurtsever.2
[iv] https://www.ce.cit.tum.de/air/people/prof-dr-ing-habil-alois-knoll/
[v] https://robotics.shanghaitech.edu.cn/people/soeren
[vi] https://arxiv.org/abs/1905.09483
[vii] https://www.sciencedirect.com/science/article/abs/pii/S0921889020303997
[viii] https://ieeexplore.ieee.org/abstract/document/9292595