Xuedong ZHANG

TUM School of Engineering and Design

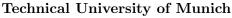
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EDUCATION



M.Sc. Mechatronics and Robotics

Grade: 1.2

Hefei University of Technology

B.E., Mechanical Design and Manufacturing and Automation

GPA: 3.62/4.3 (Ranking: 11/384)



Munich, Germany Apr. 2020 - Oct. 2023

Apr. 2020 - Oct. 2023

Hefei, China Sep. 2013 - July 2017

WORK EXPERIENCE

Unilever (China) Co., Ltd.

Quality Engineer

Hefei, China

July 2017 - Apr. 2018

- Responsible for multiple quality projects such as the *Production Date Missing* project and the *Packaging Material Scratch* project.
- Enhanced the quality of products, e.g. reduced the occurrence of production date missing and scratches on the bottle body.

RESEARCH EXPERIENCE

Technical University of Munich

Munich, Germany

Master's Thesis (C++, Python, PyTorch, OpenCV)

Feb. 2023 - Sep. 2023

Understand Human-Object Interaction in Scene for Human-Robot Collaboration Supervisor: Prof. Dr.-Ing. Darius Burschka, Machine Vision and Perception Group

Advisor: M.Sc. Hao Xing, Machine Vision and Perception Group

- Collected a new dataset for action recognition and segmentation.
- Developed a real-time human-object interaction system, which used OpenPose (human skeleton) and YOLO (object detection) to generate interaction data directly from camera feeds and graph neural networks for analyzing complex spatiotemporal relationships for action recognition. Demos available on my homepage.
- Evaluated the constructed real-time system on the collected dataset, an accuracy of 73.93% and a processing speed of about 33 fps can be achieved.
- Presented this work at the Munich Robotics Fair Automatica 2023.
- Proposed an additional improvement to denoise data using a diffusion model after completing this thesis.

Technical University of Munich

Munich, Germany

Semester Thesis (Python, OpenCV)

Apr. 2022 - Nov. 2022

A Robust Method for Joint Computation of Structure and Depth using Plane and Parallax Supervisor: Prof. Dr.-Ing. Darius Burschka, Machine Vision and Perception Group

Advisor: M.Sc. Hao Xing, Machine Vision and Perception Group

- Analyzed optical flow data for motion detection with epipolar and flow vector constraints.
- Estimated the depth of dynamic objects under a moving camera by using the structure from motion (SfM) algorithm and their relative scale based on the ground information.
- Modified the optical flow and the structure of dynamic objects using 3D information and the Plane and Parallax algorithm and then used the modified optical flow to estimate depth of dynamic objects.

Computer Vision

Course Project (MATLAB)

Munich, Germany Apr. 2022 - Sep. 2022

- 4 tasks using MATLAB Grader, including implementing a Harris feature extractor, calculating image point correspondences between two images, estimating the essential matrix using the eight-point algorithm, and extracting all possible Euclidean movements (R, T) from the estimated essential matrix.
- A computer vision challenge, reproduced the paper work of Tour into the picture: using a spidery mesh interface to make animation from a single image. Developed a Matlab application that is capable of creating and visualizing different perspectives of a room based on a single image.

Computational Acoustics in Python

Course Project (Python)

Munich, Germany May 2022 - May 2022

- Numerical analysis of acoustic problems.
- Implementation of 3D Boundary Element Method in Python for acoustic problems.

Practical Course MATLAB/Simulink for Computer Aided Engineering Munich, Germany Course Project (MATLAB)

Oct. 2021 - Mar. 2022

- Using toolboxes and solutions provided by MATLAB/Simulink to solve exercise tasks.
- Toolboxes, such as Simulink, Optimization Toolbox, Statistics and Machine Learning Toolbox, Symbolic Math Toolbox, Control System Toolbox, Simulink Control Design Toolbox, Stateflow Toolbox, etc. are included.

Mobility Data Analysis

Course Project (Python, Pandas)

Munich, Germany Apr. 2021 - Sep. 2021

- Analyzed driving behavior and personal mobility data using Python (Pandas, GeoPandas).
- A machine learning project where GPS trajectory data was used to classify transportation modes (car, bus, bike, walk, etc.).

HONOURS & AWARDS

Outstanding Graduate	Provincial level, 2017
Outstanding Graduate	School level, 2017
The Second Prize Scholarship	School level, 2016
The First Prize Scholarship	School level, 2015
Excellent Student Cadre	School level, 2015
Merit Student	School level, 2015
The Third Prize Scholarship	School level, 2014

SKILLS

Programming Languages: Python, C/C++, MATLAB

Frameworks: PyTorch, OpenCV, CoppeliaSim, ROS2

Languages: Native: Chinese

Fluent: English (C1 IELTS: 7), German (C1 DSH: 2)

HOBBIES

Reading books, Hiking, Playing chess