

JIACHEN LU

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🎓 EDUCATION

Technical University of Munich, Munich, Germany 10/2022 – 06/2025
Master of Science (M.Sc.) in Robotics, Cognition, Intelligence (RCI) GPA: 1.7/1.0 (Lower is better)
Core Curriculum: Artificial Intelligence, Robotics, Machine Learning, Machine Learning (graph and sequence data),
Deep Learning, Computer Vision (multi-view geometry/detection, segmentation and tracking),
Advanced Driver Assistance System (ADAS), Autonomous Driving (AD) Software Development

Coburg University of Applied Sciences, Coburg, Germany 10/2020 – 04/2022
Bachelor of Engineering (B.Eng.) in Automobile Engineering (AE) GPA: 2.0/1.0 (Lower is better)
Core Curriculum: Vehicle dynamics, Mechatronics

Tongji University, Shanghai, China 10/2017 – 04/2022
Bachelor of Engineering (B.Eng.) in Vehicle Engineering & After-Sales Services GPA: 2.6/1.0 (Lower is better)
Core Curriculum: Advanced Mathematics, Physics, Mechanics, Electricity, Control Theory, Sensors and Actuators

👤 WORKING EXPERIENCE

Porsche Engineering Services GmbH, Moensheim, Germany 04/2024 – 09/2024
ADAS Test and Development Engineer Internship
Tech Stack: Python/PyTorch/PyTorch Lightning/Jira/Confluence/Codebeamer

- Support the AI team in their daily work and complete sub-projects related to Deep Learning. Implemented an inference and visualization script for **LATR-based 3D Lane Line Detection** to detect and classify road boundaries and fences. Reproducing **SignParser-based Traffic Sign Understanding** for recognizing and understanding text-based traffic signs. Reproducing **Metric3D-based Traffic Sign Reconstruction** for reconstructing 3D traffic signs. Based on the above outputs generate real-world 3D modeling in real time in the simulator
- Responsible for functional/unit/integration testing of **Mobileye SuperVision's L2++ Advanced driver-assistance systems (ADAS)**. Constructed test reference routes based on Google Map and actual driving experience, and designed test cases based on multi-dimensional test evaluation matrix and actual weather and road conditions. Provide on-site support and accompanying tests for highway and urban road tests, and record test conditions in real time.
- Provided test system maintenance and development for Macan 4 with IAV and Bosch Parking Assist, on-site support and accompaniment for functional tests such as ePark/TPA/RA, and real-time documentation of test status and test case passes. And develop the video detection model for detecting the status of HMI buttons based on **YOLOv9**, which is used to compare with the button signals on the CAN-BUS.
- Support the ADAS Driving and Parking team in their daily development and testing activities

Daimler Trucks AG, Stuttgart, Germany 10/2021 – 03/2022
Charging System Test and Development Engineer Bachelor's Degree Thesis
Thesis title: Development of a restbussimulation for charging system control units and software modules as well as test concepts
Tech Stack: CAPL/Vector CANoe/Hardware-in-the-loop simulation (HiLs)/Restbussimulation

- Design and development of V-models, **Hardware-in-the-Loop simulation (HiLs)** and **Restbussimulation**, for the testing of the charging system components of the eActros electric trucks
- Write, Extend and Optimize existing test cases based on existing test frameworks and ECU development standards
- Introduce the concept of **Key Performance Indicators (KPIs)**, develop evaluation criteria and tools for test case automation, and evaluate existing test cases
- Write implementation scripts for automation test cases based on **CAPL** and **CANoe**, design and build corresponding script configuration and visual user interface

Daimler Trucks AG, Esslingen am Neckar, Germany 05/2021 – 10/2021
High Voltage (HV) Component Test and Development Engineer Internship
Tech Stack: CAPL/Vector CANape/Vector CANalyzer

- Supporting teams in the daily development and testing of HV resistor assemblies in the powertrain of eActros electric trucks
- Design of test concepts and coordination of test plans for the eActros summer road function tests. Provide **on-site support** and accompany the tests during the testing
- Design and build a **GUI** based on **CAPL** and **CANape** for online monitoring of the operational status of specific components in the test vehicle. Write component test scripts to monitor, collect and analyze test data online by monitoring the CAN bus
- Develop and write automated data mining scripts for offline evaluation of specific components of test vehicles based on CAPL and CANape's **data mining** capabilities

PROJECT EXPERIENCE

Master Thesis: 3D Semantic Scene Completion

08/2024 – 06/2025

Tech Stack: Python/Pytorch

Project Link:

- MonoScene-based and VoxFormer-based
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TOD2D: Traffic Object target Detection and classification for 2D images

03/2024 – 07/2024

Tech Stack: Python/Pytorch/OpenCV/YOLOv5-v9/DETR/SwinT/ResNet/EfficientNet

Project Link: TOD2D

- Data cleansing, data augmentation and creation of dataset in YOLO/COCO format based on nuImages 2D image dataset
- Target detection of images in nuImages dataset using YOLOv5-v9 belonging to One-Stage and Transformer-based DETR/SwinT
- Using OpenCV and pre-trained YOLOv9 to extract and preclassify the target objects for the traffic light dataset DTLD/BSTLD and the traffic sign dataset GTSRB/TT100K, resize the images of the target objects and create the YOLO-format dataset
- Using the manually created traffic light and traffic sign datasets, pre-training the classification headers for classifying the type and color of traffic lights as well as the content of traffic signs based on ResNet50 and EfficientNet b3 were used as Second-Stage classifiers for YOLOv9
- Compared to direct training YOLOv9, TOD has improved training speed by 65%, reduced hardware requirements by 25% and improved ACC by about 12%

End-to-end learning for self-driving cars

10/2023 – 03/2024

Tech Stack: Python/Pytorch/Pytorch Lightning/OpenCV/ResNet/ViT/GRU

Project Link: SelfDrivingCars

- Based on Unity’s car driving simulator, manually sampling the training data and utilizing OpenCV to clean, filter, process and augment the raw image data
- Using ResNet50 as an image feature learning backbone module to realize direct steering angle prediction using vehicle front images, i.e., end-to-end learning
- In the ablation experiments, the performance of different network architectures in realizing end-to-end learning are tested, including ResNet50, ResNet50+GRU and ViT
- Compared to other models, the training and inference speed of ResNet50 is improved by 35%, and the autonomous driving model trained based on ResNet50 realizes the high speed of a small car in the driving simulator with 0 collision

SoftCap: Generating Dense Descriptions for 3D Point Cloud using Sparse Convolution

04/2023.04 – 09/2023

Tech Stack: Python/Pytorch/Pytorch Lightning/C++/SoftGroup/GNN/GRU/Attention

Project Link: SoftCap

- Applying SoftGroup as the detection backbone module in 3D point cloud scenarios to implement a soft grouping mechanism on point cloud data for instance proposal generation and classification
- Constructing GNN based on physical relationships between instances in the 3D point cloud scene, and obtaining as well as learning spatial features from instance to instance through the message passing algorithm
- Generating descriptions of instance features and their spatial attributes in the 3D point cloud scene based on augmented object features by means of a multilayer GRU module and attention mechanism
- In the process of training the model, supervised learning based on Teacher Forcing and reinforcement learning based on Self-Critical are used
- In the ScanRefer dataset, SoftCap performs well in localizing and describing objects in the 3D point cloud scene, mAP@0.5IoU reaching 57.38 and CIDEr@0.5IoU reaching 36.27. Compared to previous work, SoftCap’s performance improves 140%

HONORS AND AWARDS

- Phoenix Contact Scholarship2020.09

IT SKILLS

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| • Programming Languages: | Python, C++, CAPL, Matlab/Simulink |
| • Commonly used tools: | Pytorch, Pytorch Lightning, NumPy, OpenCV, Pandas, Git, Docker |
| • Commonly used Software: | Word/Excel/PowerPoint, Vector CANoe/CANape/CANalyzer, AutoCAD, CATIA V5 |

LANGUAGE SKILLS

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|------------------------|-------------|--------------|------------|--------------|-------------|---------|
| • English (C1): IELTS | Overall: 7 | Listening: 8 | Reading: 7 | Writing: 6.5 | Speaking: 6 | 2022.01 |
| • German (C1): TestDaF | Overall: 15 | Listening: 3 | Reading: 4 | Writing: 4 | Speaking: 4 | 2021.12 |

OTHER SKILLS

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| • Driving License: | German B197 license, Chinese C1 license |
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