Runheng Zuo

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Education

Shanghai Jiao Tong University **Sep. 2023 – March 2026**
Master of Science in Mechanical Engineering *Shanghai, Shanghai*

Xi'an Jiaotong University **Sep. 2019 – June 2023**
Bachelor of Science in Mechanical Engineering *Xi'an, Shaan Xi*

Relevant Coursework

- Computer Graphics
- Data Structures
- Control Theory
- Circuit Theory
- Artificial Intelligence
- Mechanical Dynamics
- Matrix Theory
- Signal Processing

Experience

SJTU-Hailuo Joint Lab **August 2023 – Present**
Algorithm Engineer Intern *Wuhu, Anhui*

- Developed partial tasks for occupancy grid maps targeting unmanned dump trucks and shovels in open-pit mining operations, showcasing strong problem-solving skills and the ability to report work progress regularly.
- Provided map data for unstructured roads on the Onsite vehicle simulation platform, enhancing understanding of dataset formats such as nusences, and gaining insights into the network relationships of roads and loading areas in mining zones.

Projects

SLAM for Degraded Environments | *Shanghai Jiao Tong University, Prof Yafei Wang* **December 2022 - July 2023**

- Engineered a flexible and efficient SLAM system by integrating solid-state LiDAR, enhancing data acquisition rates and point cloud resolution, tailored for complex and degraded environments.
- Improved localization accuracy in SLAM systems under various degraded scenes, achieving a 60% reduction in relative position error compared to FAST-LIO2 and minimizing mapping ghosting effects.

Locust-like Jumpping Robot | *Xi'an Jiaotong University, Prof Tonghai Wu* **February 2021 - August 2022**

- Designed a multi-mechanism locust prototype, including a six-link slider, biomimetic legs, and a crank-rocker wing-flapping mechanism, demonstrating innovation in biomimetic robotics.
- Programmed obstacle detection features using Python and OpenCV on a Raspberry Pi, achieving less than 5% measurement error in height detection through grayscale contour extraction.
- Controlled robotic movements via a low-power Bluetooth-enabled WeChat mini-app, emphasizing skills in mobile communication and control systems.

House Renting on Web Mining | *National University of Singapore, Prof Lek Hsiang Hui* **May 2022 - August 2022**

- Built predictive models using decision trees and other analytical methods, showcasing capabilities in data analysis and machine learning.
- Created a visual website using Streamlit to display data analysis results, demonstrating proficiency in web development and data visualization.

Bear Fault Diagnosis on DL | *Xi'an Jiaotong University, Prof Jinglong Chen* **April 2022 - July 2022**

- Segmented and analyzed the Case Western Reserve University bearing dataset, trained a convolutional neural network model, and visualized bearing faults using t-SNE, highlighting skills in deep learning and data science.

Loan or not on ML | *National Taiwan University, Prof Hsuantien Lin* **September 2021 - January 2022**

- Utilized Catboost decision trees, neural networks, and other advanced machine learning techniques to execute punitive binary classification for credit card users, achieving over 90% accuracy on a Kaggle test dataset.

Awards and Honors

20th China Graduate Mathematical Modeling Competition Third Prize | *Nationwide* **November 2023**

XJTU Outstanding Undergraduate | *Schoolwide* **July 2023**

10th China Mechanical Innovation Design Competition National First Prize | *Nationwide* **August 2022**

MCM/ICM Meritorious Winner | *Worldwide* **March 2022**

Skills

English Level: TOEFL:92, CET6 599
Languages: C++, Cmake, Python, MATLAB, Qt, Excel VBA, Markdown
Technologies/Frameworks: ROS/ROS2, GitKraken, LaTeX, Solidworks, Keil5, ANSYS, SPSS, Origin