Mo Xu
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EDUCATION

University of Michigan -Ann Arbor   Ann Arbor, MI, United States
MEng in EECS track Data Science & Machine Learning   Sept 2022 – Expected Dec 2023
- GPA: 3.7
- Main modules: EECS 545 Machine Learning, ROB 530 Mobile Robotics, EECS 501 Probability & Random Processing, EECS 470 Computer Architecture

Dalian University of Technology   Dalian, China
BEng in Electrical Engineering   Sept 2018 – June 2022
- GPA: 3.5
- Main modules: Intelligent Algorithms, Modern Control Theory, Programmable Controller

Programming: MATLAB, Python, C++/C, SystemVerilog, Bash, SQL
Github URL: https://github.com/AlfredMoore?tab=repositories
Personal Page: https://alfredmoore.github.io/

WORK EXPERIENCE

ABB Engineering (Shanghai) Ltd.   Shanghai, China
Intern, Electronics department   June 2021 – Aug 2021
- Involved in the electrical high-voltage power system design for the energy supply of robots.
- Utilized C language to control the high voltage power, achieving stable performance.
- Analyzed the current conditions of the circuit board through the test data and test potential insulation problems to avoid safety problems.
- Established a database to record the amount of electrical components, and added more than 1000 records.

RESEARCH & COMPETITION

Lidar and Visual ORB Fusion
ROB 530 Course Project   –In Progress
- Utilize **ORB-SLAM3** and **OpenCV** to detect and determine objects, and **Lidar** SLAM to convert the 3d points cloud into a map of distinctive features from the dataset of NCLT.
- Use ORB-SLAM3 and LiDAR-based SLAM together as a form of error checking by having each feed back into the other, and take the average of ORB and Lidar as the second method.
- Compare the performance of two Fusion methods with the ORB-SLAM3 and Lidar-based SLAM systems.

Network Proxy Server Management System
Individual Project
- Established a management system to provide effective server nodes across the world, supported to create, update, utilize and delete the proxy nodes, based on **AWS EC2**.
- Support multiple proxy protocols including **Vmess**, **Trojan**, and **Shadowsocks** to achieve various network security requirements.
- Disguise the proxy connections as normal **HTTP** to avoid unexpected supervision.

Research on Bearing Fault Diagnosis Method Based on Granular Model
Research Assistant
- Used wavelet packet threshold to denoise the original signal on **MATLAB**
- Applied **NumPy** information granulation analysis to obtain the main information on Python
- Established **Pytorch** stacked convolutional self-encoder(**CNNs**) to extract the main information features and achieved accuracy higher than 98% and visualization with **matplotlib**.
- Utilized **Scikit-learn** unsupervised learning **K-Means** to classify the feature.

Gantry Crane System Optimized on Simulated Annealing
Course Project
- Utilize Simulink in **MATLAB** to build the Gantry Crane physical model based on control state equations.
- Control the system with a double closed-loop control **PID** method for stability.
- Optimization of PID control system parameters with **Simulated Annealing Algorithm** to avoid the local optimal.