

# 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.

### 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.

### Mathematical Contest in Modeling Held by COMAP

Team Leader

- Utilized the principal component analysis algorithm and multiple linear regression to analyze the influence of the external environment on fungi on **MATLAB**
- Applied the species competition model to simulate fungi's intraspecific competition, added climate factors and Gaussian white noise to simplify the external disturbances
- Completed paper and won the prize of Meritorious Winner