# 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: Machine Learning, Robotics SLAM, Probability & Random Processing, 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

**Programing:** MATLAB, Python, C/C++, Bash, SQL, Tableau, HTML, CSS, SystemVerilog
**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, added more than 1000 records.

## Research & Competition

**Prediction and Feature Analysis of Spotify Songs Popularity**
EECS545 Courese Project

- Utilize the Librosa package for feature extraction from the spectrum and clean data with **Principal components analysis** by **Scikit-learning**.
- Establish the convolutional neural network(**CNN**) model with highly correlated features kernels and estimate the weight of each kernel.

**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.

**Meritorious Winner of 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.