Zihao **Wei**

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Education

University of Michigan

Ann Arbor, USA

B.S. in Computer Science and Engineering

Aug. 2021 - Apr. 2023 (Expected)

- GPA: 4.0/4.0

Shanghai Jiao Tong University

Shanghai, China

B.S. in Electronic and Computer Engineering

Sep. 2019 - Aug. 2023 (Expected)

- GPA: 3.7/4.0

Skills

Operating System	Windows, Linux
Programming	**C++**, **Python**, JAVA, ELM, SQL, JavaScript, HTML, CSS
Tools	Git, Markdown, LaTex
Machine Learning Framework	**Pytorch**, Keras, Tensorflow
CAD	SolidWorks, AutoCAD
Languages	Chinese, English

Experience

Dynamic System Control Lab

Shanghai, China

Research Assistant

Mar. 2021 - Aug. 2021

- Supervisor: Chengbin Ma.
- Design a battery management system.
- Develop a GUI for data-acquisition system.
- Learn knowledge about battery's remaining useful life prediction.
- Discover new data-driven methods to predict lithium-ion battery's remaining useful life.

SJTU Student Innovation Center

Shanghai, China

Member

Sep. 2020 - Mar. 2021

- Advisor: Chuntao Leng, Shukun Wu.
- Take part in the **"Participate in Research Program"** in SJTU.
- Design a new Swerve chassis which enables robots to move in all directions.
- Design and develop the control system for the chassis.

SJTU VEX Robotics Team

Shanghai, China

Member

Sep. 2019 - Mar. 2021

- Design robots for **VEX** competition.
- Create parts for the robots by CAD software.
- Manufacture and assemble the robots.

Projects

A-ESRGAN Model

Machine Learning (Computer Vision)

Nov. 2021 - Dec. 2021

- Propose a new **multi-scale attention U-net discriminator** for blind image Super Resolution problems.
- Develop the new methods A-ESRGAN by **Python** and **Pytorch**.
- Test A-ESRGAN on benchmark datasets and compare with the state-of-the-arts methods.
- Visualize and analyze how A-ESRGAN works.
- Conclude the idea and results into a paper.

Lithium Battery Remaining useful Life Prediction System

Machine Learning (Time Series) *Mar. 2021 - Aug. 2021*

- Develop a novel algorithm to predict how many rounds can a lithium ion battery can recharge before being discarded.
- Develop a feature extraction and denoising algorithm on the input time series of Voltage, Current and Temperature acquired when charging and discharging lithium battery.
- Apply **GASF** to each feature to change the time series to a 2D image
- Train a modified **Resnet50** on the synthesized images.
- The entire project is developed by **Python** and **Pytorch**.

OPPO Breeno Conversational Short-text Semantic Match

Machine Learning (Natural Language Processing) *Apr. 2021*

- Develop a program to give whether two sentences are semantic similar.
- Build a dictionary based on word frequency and mapping it to Chinese words.
- Vectorize the sentences and fine-tuning on **BERT**.
- The entire project is developed by **Python** and **Keras**.

Intelligent Report and Prediction Model

Machine Learning (Computer Vision and Natural Language Processing) *Feb. 2021*

- Use statistical tools to predict the trend of spread of Asian giant hornets based on historical reports.
- Build an intelligent classification model on whether a report is a true report of Asian giant hornets.
- Use **CNNs** and **YoloV3** to verify the likelihood whether the image contains in a report is an Asian giant hornet.
- Process the contents in a report by stemming, lemmatization and **Word2Vec**.
- Use characteristic words analysis and sentimental analysis to assess the reality of a report.
- The entire project is developed by **Python** and **Keras**

Prototype for Carpool Platform

Backend and Frontend *Jan. 2021 - May. 2021*

- Put forward the idea of a carpool platform for university students.
- Develop the backend by **Java** and **MySQL** based on **Springboot** framework.
- Develop the frontend by **JavaScript** based on WeChat Mini-program API.
- Deploy the platform by using **Apache** and Tecent Cloud Servers.

Civilization Restart

Frontend *May.2020 - Aug. 2020*

- Develop a rouge-like pixel shooting game by **ELM**.
- Design the game AI by behaviour trees.
- Write a background story for the game and make a trailer for the game.

Honors & Awards

Feb. 2021	**Finalist**, COMAP's Mathematical Contest in Modeling (MCM)	*Online*
May. 2021	**3rd Prize**, 11-th "Innovation, Creativity and Entrepreneurship" Competition	*Shanghai, China*
Apr. 2021	**Rank 361/5345**, GAIIC 2021 Track 3: OPPO Breeno Conversational Short-text Semantic Match	*Online*
2019-2020	**Scholarship**, Academic Excellent Scholarship	*Shanghai, China*
Dec. 2020	**The Excellence Awards**, World Robot Competition Finalsan and Smart Robot Expo	*Foshan, China*
Dec. 2019	**Best Design Awards**, China trials for 2019 VEX World Championships	*Chongqing, China*

Publish

A-ESRGAN: Training Real-World Blind Super-Resolution with Attention U-Net Discriminators

First Author *Dec. 2021*

- Submitted to 2022 IEEE International Conference on Multimedia and Expo (ICME)
- Have been pre-printed on arXiv: https://arxiv.org/abs/2112.10046