

Yimin Zhao

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EDUCATION

National University of Singapore, Singapore, Singapore

Aug. 2023 — Present

Master of Science in Robotics

Supervisor: Prof. Marcelo H. Ang Jr.

Masterarbeit: Coming Soon

Representative Courses: Coming Soon

Southwest Jiaotong University, Chengdu, China

Sept. 2019 — Jun. 2023

Bachelor of Science in Computer Science

Average Score: 88.6/100

Supervisor: Lecturer Jin Gu

Bachelorarbeit: Research on EEG emotion recognition based on multi-feature fusion

Representative Courses: Computer Processors 100/100; Databases 97/100; Machine Learning 96/100; Algorithms and Data Structures I 96/100; Computer Architecture 95/100; Web Application Development 94/100; User Interfaces 94/100;

ACADEMIC EXPERIENCE

Simulator for Joint Prediction and Planning for autonomous driving

Advanced Robotics Centre, National University of Singapore

Singapore, Singapore

Team Member

Sept. 2023 — Present

- Participating design of model and intelligent method for selecting optimal result.
- Developing planner algorithm to correct and smooth planning routes.
- Coding for simulation and visualization of final results.

Neural Mechanism of Multi-modal Emotion Recognition Based on Brain Network Analysis

Sichuan Provincial Natural Science Foundation Youth Project

Chengdu, China

Team Member

Jan. 2022 — Dec. 2023

- Reviewed literature and proposed modalities of facial video and EEG should be considered; wrote research proposal.
- Experimented transformer and 3D-CNN as classifiers to optimize results.

Emotion Judgment System Based on Deep Learning and EEG Analysis

National Student Research Training Program

Chengdu, China

Team Leader

May. 2021 — May. 2022

- Pre-processed DEAP dataset through band-pass filter and Independent Component Analysis (ICA) by using Python MNE package library.
- Extracted wavelet coefficients using the db4 wavelet of the continuous wavelet decomposition; generate 'scale' (64) dimension from frequency (128 Hz) dimension (Nyquist rate); calculated average energy to Shannon entropy ratio (EER) for each scale; selected appropriate ranges of scale to calculate.
- Built a novel four-classifier by modifying bi-classifier; selected the eight dominate channels with the most prominent emotional response for the enhancing model performance.

Functioning Fungi: A model based on climate and interaction trait

Mathematical Contest in Modelling

Chengdu, China

Student Advisor

Mar. 2021 — Apr. 2021

- Reviewed related material and literature about modelling tools and the topic of this contest; analysed useful information and recommended all helpful materials to team members.
- Supervised the progress of each member and assisted them in debugging codes and offered suggestions for paper structure; finished conclusion of the paper and collated reference.

Design and fabrication of a brain-controlled rolling robot based on OpenBCI-Python-Arduino

Provincial Student Research Training Program

Chengdu, China

Team Member

Jun. 2020 — May. 2021

- Designed and achieved a simple 'admissible heuristic' by utilizing RNN in TensorFlow.
- Pre-processed and canceled noise in EEG data using NeuroPype; extracted feature through the Common Spatial Pattern (CSP); employed Linear Discriminant Analysis (LDA) as classifier.
- Designed and developed a novel 'Disk' human-computer interaction interface by PyQt of Python; output of the classifier indirectly controlled the robot by switching 'gears' on the 'Disk' that represent different motion states.

PUBLICATIONS

- [1] W. Haohong, G. Shenghao, **Yimin, Zhao**, S. Maojia, W. Heng, and D. C. Rompapas. The mind commands you: Combining brain-computer interactions with augmented reality to control internet of things (IoT) tools, and robotic platforms. In *2022 IEEE 5th International Conference on Electronics Technology (ICET)*, pages 1026–1031, May 2022.

AWARDS

China-US Young Maker Competition (CUYMC) Ministry of Education of the People's Republic of China	National Second Prize Aug. 2021
17th "Challenge Up" China Association for Science and Technology	National Third Prize Nov. 2021
16th "Challenge Up" China Association for Science and Technology	Provincial First Prize Jul. 2021
Mathematical Contest in Modeling Consortium for Mathematics and Its Applications	Successful Participant 2021
13th Extracurricular Scientific and Technological Innovation Experimental Competition Southwest Jiaotong University	First Prize Jan. 2022
12th Extracurricular Scientific and Technological Innovation Experimental Competition Southwest Jiaotong University	Third Prize Jan. 2021
Comprehensive Scholarship Southwest Jiaotong University	Second Prize Dec. 2021
Excellent Student Cadre Southwest Jiaotong University	Excellent Dec. 2021

Work and Extracurricular Experiences

Xi'an ZhenTec Co., Ltd

Technical Department
Software Engineer

Xi'an, China
Jul. 2021 — Sept. 2021

- *EEG-based emotion classification*: Made video experimental paradigm; utilized marking box, EEG collector, amplifier, and paradigm to build experimental platform; wrote data collection script.
- *EEG-based sleep stages monitor*: Implemented OSC port listening to achieve the overall data transmission; developed sleep stages display interface using PyQt.

School of Mechanics and Aerospace Engineering, Southwest Jiaotong University

Model Aircraft Association
President

Chengdu, China
Sept. 2020 — Jun. 2022

- *Competition organization*: Planned and organised 12th and 13th Mechanics Innovation Competitions; responsible for the topics review, material and site preparation, publicity, and result review
- *Vertical take-off and landing (VTOL) project*: Initiated the project sponsored by Leeds Life Foundation; designed structure and completed the deployment of the control devices.
- *Administrative work*: Took charge of the financial management, staff recruitment and documents writing.

SKILLS

- **Programming**: Python, C, MATLAB, HTML5, CSS3, JavaScript, C++, Java
- **Libraries**: PyTorch, TensorFlow, Numpy, Flask, Django, PyQt, Qt
- **Software**: L^AT_EX, Git, Linux, Anaconda, Android Studio, OpenBCI, draw.io, Docker, Eprime
- **Language**: Mandarin (native), English (proficient), Malay (basic)