Mao Chi (Matthew) He

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SELF INTRODUCTION

Hello, I am Mao Chi He, currently enrolled in an **Interdisciplinary Program at National Tsing Hua University**, focusing on courses from both the **Computer Science** and **Power Mechanical Engineering** departments. I am currently participating in an exchange program at **UC Berkeley's Computer Science** department, where I developed a deep interest in **algorithms** and **artificial intelligence (AI)** and actively engaged in hands-on learning. To strengthen my practical skills, I participated in **hackathons**, enhancing my problem-solving and teamwork abilities.

EDUCATION

University of California, Berkeley ***Aug 2024 - May 2025***
Exchange in Computer Science Department

National *Tsing Hua University (Taiwan)* ***Aug 2021 - May 2024***
Bachelor of Interdisciplinary Program of Engineering which I studied in both **Computer Science** and **Mechanical Engineering**

EXPERIENCE AND SIDE PROJECTS

Participate in National Tsing Hua University CVLab ***Jan 2025 - Present***

Undergrad Research Assistant

- **Computer Vision**.
- Utilizing 3D Gaussian Splatting for real-time image simulation and 3D scene reconstruction, enhancing rendering efficiency and geometric accuracy.

AI Cup Hackathon ***Oct 2024 - Nov 2024***
(National College Artificial Intelligence Competition of the Ministry of Education)

- Achieved **7th** place out of **487 teams** in the competition.
- Applied **OCR** to extract text from images and generate **embeddings** for analysis.
- Integrated **ChatGPT**, **Gemini**, **Claude**, and **Llama APIs** to process embeddings and retrieve optimal answers.
- **Fine-tuned** models to ensure accurate, AI-driven responses from image-based data.

2024 GenAI Stars Hackathon ***May 2024 - July 2024***
(Advanced to the semifinals and received the Merit Award)

https://shorturl.at/y9bwv

- Utilized **Yolo V8** for player detection and **Sklearn Kmeans** for team classification.
- Applied **OpenAI Whisper** for audio-to-text conversion and **GPT-4** for text summarization.
- Integrated video processing and AI-driven insights into a **Flutter**-based application.

Participate in Computational Neuroergonomics and Neuroeducation Lab ***Aug 2023 - Dec 2024***
(CNELAB)

Undergrad Research Assistant

- Designed and programmed a frequency flashing device using **Arduino UNO R3** connected to a 9-LED array.
- Conducted **EEG signal** acquisition using a 32-channel wireless EEG cap.
- Employed advanced signal processing methods, including **CNN**, **CCA**, **SCCA**, and **ETRCA**.
- Implemented machine learning algorithms (**SVM**, **Random Forest**) to validate and enhance prediction accuracy.

Ground Satellite Observation Station Project ***Feb 2024 - Jun 2024***

https://github.com/Matthew910818/Satellite-Project.git

- Utilized **Yolo v5** for facial recognition; enhanced accuracy using **RoboFlow** due to initial low precision.
- Implemented **PID control** to ensure smoother and more stable motor operation.
- Transferred data from temperature, humidity, and PM2.5 sensors to a computer via **WebSocket;** used **Python** to upload this data to a data.json file on **GitHub** for web access.
- Designed the web front-end with **HTML** and **CSS**.