Mao Chi (Matthew) He

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EDUCATION

- **University of California, Berkeley** Aug 2024 – May 2025
  Exchange Student, Computer Science Department *Berkeley, CA*
- **National Tsing Hua University (Taiwan)** Aug 2021 – May 2024
  B.S., Interdisciplinary Program of Engineering (CS + MechE) *Hsinchu, Taiwan*

EXPERIENCE

- **CVLab, National Tsing Hua University** Jan 2025 – Present
  Undergrad Research Assistant *Hsinchu, Taiwan*
  - **Computer Vision**
  - Utilizing **3D Gaussian Splatting** for real-time image simulation and 3D scene reconstruction, enhancing rendering efficiency and geometric accuracy.
  - Constructed digital twin models to simulate real-world scenarios.
- **CNELAB, National Tsing Hua University** Aug 2023 – Dec 2024
  Undergrad Research Assistant *Hsinchu, Taiwan*
  - Designed and programmed a frequency flashing device using Arduino UNO R3 connected to a 9-LED array.
  - Collected **EEG signals** 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.

PROJECTS

- **AI Agent Project** Jan 2025 – Present
  Developer *Berkeley, CA*
  - Developed an AI agent to automate medical insurance claims.
  - Used **n8n**, **LangChain**, **Qdrant**, and **Groq** to build intelligent workflows.
- **AI Cup Hackathon** Oct 2024 – Nov 2024
  *Participant (**7th place** out of 487 teams)* *Taiwan*
  - 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.
- **GenAI Stars Hackathon** May 2024 – Jul 2024
  *Participant (**Semifinalist & Merit Award**)* *Taiwan*
  - Used **YOLOv8** for player detection, **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.
- **Ground Satellite Observation Station Project** Feb 2024 – Jun 2024
  Team Leader *GitHub Project*
  - Utilized **Yolov5** 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; usedPython to upload this data to a data.json file on GitHub for web access.
  - Designed the web front-end with HTML and CSS.

SKILLS

- **Languages & Tools**: Python, C/C++, HTML, CSS, Arduino, Flutter, SQLite
- **Frameworks**: LangChain, YOLOv5/v8, Whisper, GPT-4, KMeans, Groq
- **Hardware**: EEG systems, Arduino UNO R3, Microcontroller systems