Hsuan Wang

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Education

Johns Hopkins University Aug. 2024 – May 2026 (Expected)
Master of Science in Engineering in Computer Science *Baltimore, Maryland*

National Yang Ming Chiao Tung University (NYCU) Aug. 2019 – June 2023
Bachelor of Science in Computer Science *Hsinchu, Taiwan*

WORK EXPERIENCE

Software Developer and Researcher Aug 2025 – Dec 2025 (Expected)
Computational Cognition, Vision, and Learning Lab (CCVL) *Baltimore, Maryland*

Software Engineer Intern June 2025 – Aug 2025
Tulane Research Innovation for Arrhythmia Discovery Center *New Orleans, Louisiana*

- Developed a comprehensive medical ECG monitoring platform using FastAPI (Python) backend with dual database architecture (PostgreSQL for user data, MongoDB for ECG signals) and React TypeScript frontend.
- Built secure role-based authentication system with JWT tokens and bcrypt password hashing.
- Designed RESTful APIs and deployed using Docker with CI/CD pipelines on private research network.
- Built an end-to-end, containerized MLOps pipeline for ECG data inference with PyTorch model loading, preprocessing pipelines, and RESTful API endpoints, deployed via Docker with NVIDIA CUDA support.
- Implemented comprehensive monitoring stack using Prometheus for metrics collection and Grafana dashboards for tracking model performance, memory usage, and system health.

Artificial Intelligence Engineer Intern Jul 2023 – Jan 2024
Glia Cloud *Taipei, Taiwan*

- Evaluated and presented insights on 15+ emerging open sourced AI models (e.g., Neuralangelo, AudioCraft), influencing strategic decisions for future product development.
- Led independent R&D on text-to-video generation with AnimateDiff, engineering a custom latent space modification to enable first-frame image conditioning.
- Eliminated manual DB tasks by creating automated SQL and Python workflows for data selection and retrieval.

Projects

HopCrave | *JavaScript, Node.js, Express, React, PostgreSQL, Docker* Jan 2025 – June 2025

- Designed and deployed a user-friendly platform enabling recipe creation, sharing, and discovery.
- Integrated GPT API for recipe auto-completion and smart ingredient suggestions.
- Developed a semantic recipe recommendation system using Sentence Transformers and cosine similarity to match recipes to user preferences.

PPG2ECG with SEGAN | *Python, PyTorch, MATLAB* Jan 2023 – June 2023

- Developed a deep learning model using a Generative Adversarial Network (GAN) in PyTorch to reconstruct high-fidelity Electrocardiogram (ECG) signals from Photoplethysmography (PPG) signals.
- Implemented a custom SEGAN-based generator with Convolutional Block Attention Modules (CBAM) and a dual-discriminator architecture that processes both time-domain and frequency-domain features to improve signal reconstruction accuracy.

Asymmetry-Aware Stroke Detection | *Res-Unet, Asymmetry Disentanglement Network* Jan 2022 – Dec 2022

- Improved brain CT segmentation accuracy for acute ischemic stroke detection by enhancing Res-UNet with asymmetry disentanglement and Laplacian-based blur analysis, increasing precision from 42.6% to 47.8%, DSC from 38.3% to 38.5%, and IoU from 26.4% to 26.9% over baseline.
- Enhanced localization of blurry stroke regions by designing a preprocessing pipeline that removed natural brain asymmetry while preserving stroke-induced asymmetry.

Technical Skills

Languages: C, C++, Python, JavaScript, Shell Scripting, SQL
Tools & Frameworks: React.js, FastAPI, Node.js, Express, PyTorch, Tensorflow, PostgreSQL, MongoDB, Git, Docker