CHIH-CHIANG HU

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EDUCATION

King's College London London, UK
M.S. in Electrical Engineering with Management Sep. 2025-Present
- Relevant Coursework: Digital IC Design, Semiconductor Fabrication, DSP, Sensors/Actuators, Renewable Power Systems, Project & Technology Management

National Yang Ming Chiao Tung University Hsinchu, Taiwan
M.S. in Biomedical Engineering | GPA: 4.05/4.3 Sep. 2021-Mar. 2024

National Sun Yat-sen University Kaohsiung, Taiwan
B.S. in Computer Science and Engineering | GPA: 3.51/4.3 Sep. 2015-Jan. 2021

Kaohsiung Medical University Kaohsiung, Taiwan
B.S. in Healthcare Administration and Medical Information | GPA: 3.51/4.3 Sep. 2015-Jan. 2021

TECHNICAL SKILLS

- Programming Languages: Python, C/C++, Java, JavaScript, SQL
- AI/ML & Data Science: PyTorch, TensorFlow, scikit-learn, Pandas, SageMaker, LLM/RAG Systems
- Cloud & Databases: AWS (S3, EC2, SageMaker), Microsoft Azure, MySQL, Firebase
- DevOps & Tools: Git, Docker, Kubernetes, JIRA, NGINX, Wireshark, Jenkins, CI/CD
- Frameworks & APIs: Flask, React, ASP.NET, Bootstrap, RESTful APIs
- Web & Data Processing: WebSocket, Scrapy, Beautiful Soup, MQTT
- Hardware/RTL: Synopsys VCS, SystemVerilog, Verilog
- Operating Systems & Scripting: Linux, Shell/Bash Scripting

PROFESSIONAL EXPERIENCES

Anivance AI **Hsinchu, Taiwan**
R&D Engineer Oct. 2024-Apr. 2025
- Developed a real-time transcription pipeline using Node.js and FastAPI, integrating Firebase and Redis to process and index ~200+ hours of medical conference recordings, supporting structured storage of 10k+ transcript segments for downstream LLM fine-tuning and analytics.
- Designed and implemented a multi-agent LLM prototype with a React.js frontend and RAG-based retrieval over ~X domain-specific documents, validated via internal benchmarking across 20 sample proposal drafts to evaluate retrieval relevance and response coherence.
- Conducted technical feasibility analysis and literature review on electrochemical biosensor integration within microfluidic platforms, evaluating signal characteristics and automation potential for scalable diagnostic workflows.

Flow, Inc. **Taipei, Taiwan**
Backend Engineer Intern Jan. 2021-July 2021
- Built Python data preprocessing pipelines for the company AI platform, reducing processing time by 23% and increasing throughput by 31% through AWS S3–optimized data flow
- Automated data labeling and preprocessing with SageMaker Ground Truth; cut processing time by 33% and improved labeling accuracy for irregular images by 27% using elastic deformation
- Migrated data processing services to AWS EC2, scaling system capacity by 200%+ through instance configuration and deployment.

AU Optronics Corporation **Taichung, Taiwan**
Software Engineer Intern July 2020-Sep. 2020
- Led end-to-end development of an Android inspection app (Kotlin) integrated with ASP.NET Web APIs to digitize safety workflows and enable real-time machine data visualization
- Deployed the app to environmental and safety teams, reducing inspection time by 47% and improving defect identification accuracy by 8% using QR-assisted logging and guided checklists
- Implemented automated alerts and real-time reporting to escalate critical issues and support faster incident response
- Built a CNN-based predictive maintenance model for vacuum bearings, achieving 95% accuracy in detecting wear/cracks and reducing unplanned downtime by 22%

Kaohsiung Medical University **Kaohsiung, Taiwan**
Teaching Assistant (AI in medical application) Feb. 2020-Jan. 2021
- Taught 100+ student per semester, troubleshooting implementations in TensorFlow and PyTorch across topics including SVM, CNN, and reinforcement learning (Q-learning)
- Developed Python-based AI/ML assignments using real medical images; produced 10+ lecture slide decks and 20+ coding

examples per year to support hands-on learning.

Research Assistant, Prof. Wen-Hsien He's Lab   Sep. 2018-July 2019
- Built an Arduino-based monitoring module (temperature, humidity, 3-axis accelerometer) embedded in a medical mattress for remote pressure ulcer risk monitoring
- Developed a thermal prediction model using finite difference methods and an unscented Kalman filter approach, achieving 92% accuracy in estimating heat flux and temperature distribution
- Integrated sensor signals and wound images using CNN and LSTM models, improving pressure ulcer prediction accuracy by 12%+ under sparse, heterogeneous data conditions
- Contributed to early design concepts for future chip integration, connecting embedded sensing with clinical monitoring requirements

PROJECT EXPERIENCES

Master's Thesis: Web-based Prosthesis Joint Infection Diagnostic System: Frontend and Backend Development Using Docker and Machine Learning   Mar. 2022-Mar. 2024

Sole Developer of Full-stack Development Using Cloud Native and Machine Learning
- Designed and deployed an interpretable PJI diagnostic system using a stacked ensemble (XGBoost, Random Forest, SVM) with a Random Forest–based explainer to support clinically usable AI outputs
- Built a full-stack web application in Flask with Bootstrap 5, containerized via Docker and deployed with Docker Compose, supporting structured data entry, querying, and real-time diagnostic visualization
- Improved interpretability and clinician alignment by integrating the Espresso algorithm and a clinician-informed numerical adjustment mechanism to ensure outputs matched medical reasoning standards
- Validated deployment stability through Locust load testing and server optimization, maintaining low error rates and reliable performance under concurrent usage

National Intelligent Manufacturing & Big Data Analytics Contest – Final Round

Silver Medal (Nationwide)   Aug. 2023-Dec. 2023
- Advanced exploratory time-series analysis on patterns in equipment failures and identified statistically significant temporal correlations using lagged-window validation.
- Developed a binary image-classification solution (reworkable vs. non-reworkable) on ~10,000 samples and designed robust training and validation types for the model to be improved over time.
- Identified filename–machine correlation causing hidden data leakage; implemented machine-aware grouping and split strategy to eliminate cross-domain overlap and improve validation reliability
- Benchmarked and ensembled EfficientNet, ResNet, MobileNet, ShuffleNet, and ViT using K-fold cross-validation with voting/stacking; selected compute-efficient CNN ensemble for final deployment based on accuracy–latency trade-offs, achieving 92% validation accuracy.
- Built a remote automation pipeline for training and monitoring without anyone being there on rented compute servers, making sure that the competition day network failure didn't stop the execution.

EchoGuard – Voice Activated Emergency Reporting System

Funded Undergraduate Research Project (Ministry of Science and Technology)   Sep. 2019-June 2020
- Developed an Android phone hands-free reporting mechanism prototype for campus safety use cases with voice activation
- Voice-to-action calling pipeline using Android SpeechRecognizer APIs - 83% command recognition accuracy and ~3 seconds end-to-end response time
- Hashed the emergency report content and stored it on IPFS to allow verification of tamper-evident records
- Tested system performance within both quiet and noisy environments (4 devices, 20 runs each) and improved runtime stability through appropriate recognizer lifecycle management and permission handling

National Top 3%, Undergraduate Research and Innovation Prize, Ministry of Science and Technology

FoodieCare - Food and Route Safety Recommender   Sep. 2017-June 2018
- Led a 5-member team across planning, development, and delivery of a food and safety recommendation system
- Built web crawlers using Scrapy and Beautiful Soup to collect restaurant data and integrated public police-record open data to construct risk clusters and safety scores for location-based recommendations
- Developed a hybrid recommender combining content-based and collaborative filtering, augmented with C4.5 decision trees and FP-tree association mining for preference modeling and pattern discovery
- Implemented an interactive web application with multi-step filtering and Google Maps API safety visualization, backed by an ASP.NET C# service to support responsive user queries

AWARDS/HONORS
- **Silver Medal,** National Intelligent Manufacturing & Big Data Analytics Contest, Dec. 2023
- **National Top 3%, Undergraduate Research and Innovation Prize,** Ministry of Science and Technology (Jan 2020)

LANGUAGES & LEADERSHIP

Languages: English (Professional), Mandarin (Native)