

HSIANG-CHEN (CHARLIE) CHIU

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Skills

Languages & Frameworks: Python, C/C++, JavaScript, TypeScript, R, React, Ruby on Rails, FastAPI

AI/ML: PyTorch, RAG, AI Agents, OpenCV, NumPy, Scikit-learn, YOLO, Transformers

Database & Tools: PostgreSQL, Redis, Git, Docker, Linux, Firebase, Heroku

Education

Texas A&M University

Aug 2025 – Dec 2026

Master of Computer Science

College Station, TX

- Relevant Courses: Software Engineering, Parallel Computing, Deep Learning

National Tsing Hua University (NTHU)

Sep 2020 – Dec 2024

Bachelor of Science in Computer Science

Taiwan

Work Experience

SaturnAI

Jun 2025 – Aug 2025

AI Software Engineer | Personal Protective Equipment Detection System

Taiwan

- Engineered a real-time PPE detection system for industrial RTSP video streams, scaling ingestion from **1 to 30** concurrent streams and sustaining **50+** FPS inference on edge devices
- Implemented multithreaded Python ingestion to enable parallel RTSP stream processing
- Integrated YOLOv8-based PPE detection with CUDA acceleration for real-time inference on edge devices
- Delivered a PyQt6 dashboard with real-time detection overlays for multi-zone monitoring by non-technical staff

Institute of Information Science, Academia Sinica

Oct 2023 – May 2024

Research Assistant | Generative AI Model Optimization

Taiwan

- Built the first unified generative framework for dual-task kinship synthesis, enabling the system to predict both child and partner faces from single-parent inputs
- Integrated StyleGAN2 and 1D Diffusion Transformers to engineer the StyleDiT pipeline, optimizing sampling strategies to improve output diversity scores by **9%**
- Implemented Relational Trait Guidance (RTG) logic to enforce precise attribute control, achieving **99.9%** gender accuracy and minimized age error (**0.0023 MSE**)

Computer Graphics and Vision Lab, NTHU

Sep 2022 – Dec 2023

Research Assistant | ML-based Image Quality Assessment

Taiwan

- Built a Unity-based data generation pipeline producing **10,000+** samples to accelerate dataset creation and improve robustness to aliasing artifacts
- Fine-tuned CNN models on the generated dataset, achieving a **10%** lift in AUC over baseline approaches
- Optimized EfficientNetV2 to cut inference latency by **46%** and reduce CUDA memory usage by **69%**

Selected Projects

Sentiment Aware Chatroom Monitor | PyTorch, Transformers, Socket.IO, JavaScript

- Designed and built a real-time system to detect toxic messages using sentiment analysis, leading a team of 4 engineers
- Fine-tuned a pre-trained Chinese BERT model on a custom dataset of chat logs, achieving **87% accuracy** and increasing toxic message classification AUC by **36%**
- Engineered a full-stack solution with a Python backend and WebSocket-based frontend alerts, enabling users to take immediate action on flagged content

ART - Agentic Resume Tailor | React, Python, FastAPI, RAG, AI Agents, SQLite, ChromaDB

- Built a local-first tailoring system using React and FastAPI, utilizing SQLite for data persistence and ChromaDB for vector retrieval to generate single-page PDF/Tex artifacts
- Designed a multi-agent loop (Query → Retrieve → Rewrite → Score) with iterative boost terms, optimizing content coverage against Job Description requirements
- Implemented rewrite safety guardrails to prevent hallucinations (semantic-drift checks, fact-freezing), ensuring **100%** adherence to original resume facts while adapting tone