KAI–CHENG TSOU

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Summary

AI engineer and **AI solution/product builder** with experience delivering **clinical imaging features**, **OCR systems**, and **real-time AI applications**. Skilled at turning **business/clinical needs → deployed solutions**, leading cross-team collaboration, and improving product reliability and user experience. Targeting **AI Solution Engineer / AI Project Manager / AI Product** roles.

Work & Professional Experience

Remex Medical **Jul. 2025 – Present**
Senior Software Engineer *Taichung, Taiwan*

- Delivered medical imaging features to production using **GitLab CI/CD**, ensuring stable releases across multiple surgical device types.
- Built a **real-time endoscope interface** (capture, denoise, zoom, annotation, recording) and ran **clinical workflow tests** with surgeons and biomedical teams.
- Developed **bleeding-detection AI** with full data pipeline, model training, and real-time inference; packaged models for hospital deployment.
- Coordinated with biomedical researchers & hardware engineers to improve system **latency, imaging quality, and hospital-level reliability**.

Taiwan Semiconductor Manufacturing Company (TSMC) **Jun. 2024 – Aug. 2024**
AI Software Engineer *Hsinchu, Taiwan*

- Built a custom OCR workflow for high-variance slide content, improving **character accuracy from ∼70% to 96–97%** and reducing manual correction effort.
- Designed preprocessing (denoising, contrast normalization) and **NLP-based post-processing**, delivering a production-ready pipeline.
- Fine-tuned PaddleOCR on real + synthetic datasets, increasing **precision, recall, and robustness** under noisy manufacturing conditions.
- Collaborated with manufacturing engineers to validate output and integrate results into an existing inspection system.

Industrial Technology Research Institute (ITRI) **Jun. 2023 – Aug. 2023**
Software Engineer, Unreal Engine Developer *Hsinchu, Taiwan*

- Built a lifelike **AI avatar** by integrating ChatGPT, Microsoft TTS, and NVIDIA Audio2Face with Unreal Engine Metahuman for real-time interaction.
- Implemented reliable OSC communication between Audio2Face and Unreal Engine, improving lip-sync fidelity and multi-language responsiveness.
- Created a user-friendly UI in Unreal, enabling non-technical team members to run demos without engineering support.

Selected Project

Hydration Level Detection System (Wearable) — Purdue University
XGBoost — Bio-impedance (1–400kHz) — Embedded/Wearable **Aug. 2023 – May 2024**

- Designed a wearable system to classify hydration levels using **multi-frequency bio-impedance** and XGBoost.
- Collected signals (1–400kHz) via MAX30009 hardware, identified **50kHz** as optimal for total-body water prediction.
- Led data processing, model development, and cross-team collaboration to produce a **real-time prototype** for on-body alerts.

Technical Skills

Programming/Tools: Python, PyTorch, TensorFlow, Scikit-learn, C++, C#, SQL, JavaScript, Angular, HTML, Git, Docker, REST APIs
AI Solutions: Deep Learning, OCR, Computer Vision, NLP, Model Deployment, **Real-time Inference**, CI/CD (*GitLab*), System Integration, API Design
Product/Workflow: Requirement Analysis, Stakeholder Communication, Performance Debugging, UX Feedback Loops, Documentation for non-technical users
Software: VS Code, Jupyter, GitHub, Postman, MATLAB, Advanced Excel