

Po-Han Huang

 Mouthhan |  Po-Han-Huang |  alan880603@gmail.com |  +886-963799179

Experience

Inventec Corp.

AI Research Engineer (Manager: Wei-Chao Chen)

May 2024 – Present

Taipei, Taiwan

- Delivered **~5s** end-to-end latency for multi-view **>4K-resolution** image batches by deploying an explainable laptop surface-defect detection pipeline across **three manufacturing lines**, streamlining exception handling and verification.
- Reduced defect labeling demand by **~60%** by building a diffusion-based synthetic data pipeline to address the **cold-start** problem, improving coverage across defect types while meeting production QC constraints.
- Produced an early-stage feasibility study and failure-case analysis for VLM-based anomaly detection (e.g., Qwen-VLM) on **synthetic PCB** scenarios, outlining key limitations, sensitivities, and improvement directions.
- Built a cross-generation regression benchmark system with consistent metrics and thresholds, achieving **<1% FN and <20% FP** and safeguarding model performance during production rollouts.
- Authored "PatchEAD," a training-free few-shot anomaly detection framework published at **WACV 2026**, proposing a unified approach to industrial visual prompting and robust defect localization under limited supervision.

Inventec Corp.

AI Research Engineer Intern (Manager: Wei-Chao Chen)

Apr 2023 – Oct 2023

Taipei, Taiwan

- Built a two-stage size estimation pipeline, achieving **99.9%** reference-mark detection accuracy and **~92%** segmentation mIoU via data augmentation, ensemble, and stable optimization, keeping size estimation error within **<5%**.
- Co-authored an **ICASSP 2024** work on data-scarce medical segmentation, developing cross-domain augmentation to improve performance under limited supervision.

Academia Sinica

Research Assistant (Advisor: Prof. Jun-Cheng Chen)

Jan 2022 – Aug 2023

Taipei, Taiwan

- Improved cross-dataset generalization for deepfake detection by developing a difficulty-aware training scheme with soft labels and a multi-head prediction design, and evaluating robustness across diverse datasets and common perturbations.
- Validated consistent gains across multiple datasets and baselines; published at **MM Asia 2023**.

Patents

- Published Application: "Segmentation model training method, device, and non-transitory computer readable storage medium," US Patent App. 2025/0166357 A1, 2025.
- In Submission: 3 additional patent applications currently in the filing process, covering generative defect synthesis, foundation model-based few-shot learning, and an explainable defect inspection pipeline.

Education

National Taiwan University of Science and Technology

M.S. in Computer Science and Information Engineering

Sep 2021 – Jul 2023

Taipei, Taiwan

- Thesis:** "Multi-Task Self-Blended Images for Face Forgery Detection" (Published at MM Asia 2023)
- Advisor:** Prof. Kai-Lung Hua, Multimedia and Visual Computing Laboratory.
- Competitions:** Participated in **2** AI competitions and achieved consistent **Top 1–2%** rankings.
- Project:** Built a PCB inspection pipeline spanning a classical feature-based CV baseline (operator-initialized ROIs) and AOI-data-driven, component-level anomaly detection, evaluated on a held-out test set.

National Taiwan University of Science and Technology

B.S. in Computer Science and Information Engineering

Sep 2017 – Jun 2021

Taipei, Taiwan

- Advisor:** Prof. Kuan-Yu (Menphis) Chen, Natural Language Processing Laboratory.
- Competitions:** Participated in **2** AI competitions and achieved consistent **Top 1%** rankings.
- Undergraduate Project:** News classification & recommendation (College Student Research Scholarship).

Publications

P.-H. Huang, J.-L. Li, P.-H. Huang, M.-C. Chang, W.-C. Chen. "PatchEAD: Unifying Industrial Visual Prompting Frameworks for Patch-Exclusive Anomaly Detection." (WACV, 2026).

S.-J. Kuo*, **P.-H. Huang***, C.-C. Lin, J.-L. Li, M.-C. Chang. "Improving Limited Supervised Foot Ulcer Segmentation Using Cross-Domain Augmentation." (ICASSP, 2024). * Equal contribution.

P.-H. Huang*, Y.-H. Han*, E. Chu, J.-C. Chen, K.-L. Hua. "Multi-Task Self-Blended Images for Face Forgery Detection." (MM Asia, 2023). * Equal contribution.

J.-D. Lin, Y.-H. Han, **P.-H. Huang**, J. A. Tan, J.-C. Chen, M. Tanveer, K.-L. Hua. "DEFAEK: Domain Effective Fast Adaptive Network for Face Anti-Spoofing." (Neural Networks, 2023).

Skills

AI Specializations

Computer Vision, Generative AI (Diffusion), Vision-Language Models (VLM)

Languages & Core

Python (Primary), C/C++, PyTorch, OpenCV, Hugging Face

Dev Tools

Dockerized environments, FastAPI, Git, Linux, Gradio