Yin-Chen Chen

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Research Objective

I operate a 95-unit smart-residential testbed that generates high-frequency, real-world IoT time series at scale. My research focuses on advancing weakly supervised learning (PU/nnPU) to address covariate shift and label noise, directly aligned with Prof. Masashi Sugiyama's lab at UTokyo GSFS. My goal is to bridge theory and deployment, creating reliable ML systems for dynamic, human-centered environments.

Research Fit with Prof. Masashi Sugiyama

- **PU/nnPU under shift & noise**: applying risk minimization to biased positives, label noise, and non-stationary streams, validated on my testbed.
- **Density-ratio estimation & importance weighting**: handling covariate shift at deployment time.
- **Weak supervision theory → IoT**: designing pipelines that preserve theoretical assumptions in real-world data.
- **Evaluation & governance**: shift-aware metrics, leakage control, and reproducible benchmark protocols.

Independent Research: Smart Residential Testbed

- **Scale**: 95 units, dual-voltage (110/220V), environmental sensors; 2022–present.
- **Sampling**: 1–60 s logs; multimodal time series with occupancy/usage events.
- **Pipeline**: ingestion → feature store → training/evaluation → deployment; drift monitoring.
- **Governance**: hashed IDs, k-anonymity windows; research-safe aggregates and synthetic traces for academic collaboration.

Professional Experience

Founder & GM, Infowin Technology Co., Ltd., Taiwan 2015–present

- Delivered enterprise systems for finance, education, religious organizations, and real estate, including a multi-currency platform for a Singapore investment firm.
- Led digital transformation for Aichi International Academy (Nagoya): IoT sensors, face-recognition attendance, internal management systems, and the official website.

Software Engineer (UEFI/RAS), IBM Taiwan 2011–2014

- Implemented reliability features that reduced field boot-failure rate across System x servers.
- Conducted root-cause analyses on critical incidents with preventive firmware patches.

Teaching (Part-time Lecturer, CYCU; AI & Programming)

2024/7–2025/6: evaluations weighted mean **4.70**, median **4.70**, IQR **4.653–4.804**; 5 sections, 215 students.
Since 2022: evaluations weighted mean **4.66**; **12** sections, **545** students.
Representative courses: *Introduction to Natural Science and AI*, *Computational Thinking and Programming*, *Introduction of Computer Programming*.
Awards: University-Level Excellent Course Design (2024, 2025).

Education

M.S., Engineering Science and Ocean Engineering, National Taiwan University 2009
Lab: Information and Network Application Lab (Advisor: Prof. Ray-I Chang).
Thesis: *Integration of Wireless Access Point and Sensor Networks*.
B.S., Computer Science and Engineering, Tatung University 2006
Prior PhD admission (NTU, 2009; strategically deferred for industry experience).

Selected Publications

- Chang, R.-I., Chen, Y.-C., et al. (2022). *Design and Implementation of an IoT Gateway for Zigbee and WiFi*. **WSEAS Transactions on Communications (Journal)**. [PDF] [Google Scholar] (Cited by: 1).
- Chen, Y.-C., Chuang, C.-C., et al. (2009). *Integrated Wireless Access Point Architecture for Wireless Sensor Networks*. **Proc. ICACT (Conference)**. [PDF] [Google Scholar] (Cited by: 15).

Skills

ML: PU/nnPU, weak supervision, density-ratio estimation, covariate shift, time-series analysis.
Software: Python, PyTorch, scikit-learn, Pandas, FastAPI, Next.js, TypeScript, SQL, C/C++.
Systems: IoT architecture, Docker, AWS, on-prem servers, CI/CD.

Languages & Availability

Mandarin (native), English (fluent), Japanese (JLPT N2).
Applying UTokyo GSFS PhD (Schedule B, 2026). TOEFL iBT planned (Sep/Oct 2025).
Open to remote/on-site meetings.

志望動機・研究概要（要約）

弱教師あり学習（PU/nnPU）を用いて、ノイズや分布変動（covariate shift）が存在する実環境 IoT データに対する堅牢なリスク最小化に取り組みます。95 戸のスマート住宅テストベッド（高頻度マルチモーダル時系列）を運用し、重要度重み付け（密度比推定）やシフト認識型の評価指標を実装しています。実データの制約を踏まえ、理論的仮定を損なわないデータガバナンスと再現性のある評価系を整備し、実装と理論の架橋に貢献します。東京大学 GSFS（杉山研究室）の研究テーマと強く整合しており、共同研究の形で価値を提供できます。

Last updated: September 2, 2025