

Yi-Cheih Hsu

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TECHNICAL SKILLS

Languages: C, Python, Go, Node.js, TypeScript

Embedded & Systems: Embedded Linux, OpenWrt, U-Boot, Device Tree, OTA, FreeRTOS (ESP-IDF), ESP32, Modbus TCP

Networking & Protocols: Layer 2/3 (Marvell CPSS, Realtek), IEEE 802.11, MQTT, AMQP, WebSocket, UART, Scapy

Cloud & Backend: AWS (IoT Core, S3, IAM, EC2), GCP, Docker, RabbitMQ, Kafka, Redis, MongoDB, GitLab CI

Security: DFIR (Magnet AXIOM, EnCase, FTK, Volatility), Post-Quantum Cryptography, BLE / CAN Bus Security

Developer Tools: Git, LLM-assisted development (Claude Code, Codex)

Spoken Languages: Mandarin Chinese (native), English (professional working proficiency)

EXPERIENCE

Software Engineer – Airgain, Inc.

Apr 2025 - Present

- **OTA Ownership:** Owned OTA upgrades end to end for an **OpenWrt**-based cellular repeater controller, from **device tree** and **U-Boot** through sysupgrade, SNMP agent, web GUI, and distribution service.
- **Reliability:** Root-caused OTA releases that reported success without flashing to a console=null bootarg; added SHA-256 checks and a reboot-confirmed run record, and fixed a path-MTU black hole stalling cellular downloads.
- **Cloud Delivery:** Built and operated the OTA service in **FastAPI** over **WireGuard** with systemd crash-loop protection; prototyped **AWS IoT Core** delivery with per-device **X.509**, IoT Jobs over HTTPS, and S3 presigned URLs.
- **Embedded Development:** Developed in **C** a **Modbus TCP** agent exposing the solar charge controller and battery to SNMP and the GUI, packaged for OpenWrt and verified in CI against a Modbus simulator.
- **Developer Enablement:** Wrote runbooks and architecture guides for firmware build, release, and OTA.

Solution Architect (Consultant) – Morelink Technology Corporation

Jul 2023 - Mar 2026

- **Technical Leadership & CI/CD:** Architected and led a team of five building a 4G/5G repeater management platform deployed to six ISPs worldwide, with **GitLab CI** for unit tests and **cross-compiled** MIPS, amd64, and aarch64 builds.
- **Solution Architecture:** Built one **Go** codebase for a **MIPS** OpenWrt agent and a Dockerized **GCP** service, linked by **AMQP** pub/sub on RabbitMQ, with MongoDB-backed REST APIs and Socket.IO feeding Vue.js dashboards.
- **Device Connectivity:** Implemented a proprietary **UART** protocol and non-blocking network I/O; built reverse SSH tunnels through carrier NAT for remote access that EU regulations require.

Software Firmware Engineer – Senao Networks, Inc.

Aug 2022 - May 2024

- **Bootloader Development:** Built a two-stage **U-Boot** for Marvell AC5X-class switches with I2C EEPROM identity, **DRAM POST**, checksum/magic/board-name validation, USB/TFTP recovery, and factory tests.
- **Platform Integration:** Integrated a Realtek RTL9313 L3 PoE+ model and **Marvell CPSS** SDK into an **L2/L3** stack; fixed an ACL DSCP bit-shift bug in the HAL plus **IGMP/MLD snooping** and loopback-recovery defects.
- **Test Automation & Mentoring:** Automated verification in **Python** with Requests and **Scapy**, cutting 48-port test runtime by 83%, from 144 to 24 minutes; taught Python to 30 engineers and mentored two new hires.

Co-Founder; CTO (since May 2024) – Skynet Cybersecurity Consulting Co., Ltd.

Jul 2020 - Present

- **Incident Response & Forensics:** Lead a 10-person team on **incident response** and **digital forensics** for ransomware, APT, breach, and insider cases across financial, academic, and critical-infrastructure clients, following **ISO/IEC 27037** and 17025.
- **Teaching:** Guest lecturer at **ITRI** (2021) teaching Internet of Vehicles (**IoV**) and **CAN bus** security, covering in-vehicle protocols (CAN/OBD-II, LIN, FlexRay), plus red/blue-team penetration testing and reconnaissance.

PROJECTS

ESP32 Open-Source Wi-Fi MAC | C, FreeRTOS, ESP-IDF; extension of esp32-open-mac (MIT)

- **MAC Port:** Rewrote the upstream Rust **802.11 MAC** (STA/AP, beacon/auth/assoc) in C on reverse-engineered ESP32 Wi-Fi registers; added multi-client AP, intra-BSS forwarding, and runtime SSID/channel changes.
- **TX Reliability & Time Sync:** Built a mutex-guarded TX slot state machine with a **DMA** watchdog, and a **PTP**-style multicast sync service driving scheduled channel hopping across nodes.

EDUCATION

National Central University

Jun 2020 - Jul 2022

M.S. in Computer Science and Information Engineering, Advanced Defense Lab

- Thesis: "VFCS: A Post-Quantum Cryptography-Based Vehicle Forensics Cloud System"; IEEE ISPACS 2024 paper
- Taiwan patents (co-inventor): [I814478], [I836508], [I777910]

Chang Gung University

Sep 2015 - Jun 2020

B.B.A. in Information Management