

JUI-CHENG TENG

Taoyuan – Taiwan

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Profile

Infrastructure-oriented engineer with strong experience in distributed systems, cloud-native platforms, observability pipelines, and security automation. Background in competitive programming (ICPC Asia) with proven ability to design and operate complex systems at scale.

Education

Ming Chuan University
B.S. in Computer Science

2021 – 2025

Technical Skills

- **Languages:** Python, Golang, C/C++, Shell, SQL
- **Infrastructure:** Docker, Kubernetes, Proxmox, Terraform
- **Observability:** Elasticsearch, Logstash, Filebeat, Kibana, Prometheus, Grafana
- **Systems:** Linux, Networking, LDAP, DNS, DHCP
- **Databases:** PostgreSQL, Redis

Projects

Catholic Backend (Flask + SQLAlchemy) — Architecture-driven Development

2026

- Built/refactored a Flask backend with a layered architecture: HTTP controllers/Blueprints → service layer (domain + transaction boundary) → repository layer (data access).
- Standardized database session lifecycle with SQLAlchemy `scoped_session` and centralized commit/rollback/close handling (Unit-of-Work style transaction boundary).
- Enforced authorization at the boundary (controller/service) and established maintainable module separation for long-term evolution.

Network & Service Monitoring Platform

2026

- Designed and deployed a full-stack monitoring system using Prometheus, Alertmanager, Grafana, and Blackbox Exporter.
- Implemented active probing (HTTP / ICMP / TCP) via Blackbox Exporter and latency monitoring with SmokePing.
- Built alerting pipelines with Alertmanager to trigger notifications on SLA violations and network anomalies.
- Integrated BGPAlerter to monitor BGP routing events and detect prefix hijacks or unexpected route changes.
- Containerized the entire observability stack with Docker Compose for reproducible deployment and maintenance.

NASA-Judge — Distributed Evaluation Platform

2024

- Implemented a DAG-based job execution model for evaluation subtasks, including dependency validation, cycle detection, and topological sorting.
- Executed tasks strictly following dependency order, skipping downstream jobs when prerequisite tasks failed (dependency-gated grading).
- Designed an execution pipeline where each task runs inside a dedicated Kubernetes Job/Pod with deterministic runtime behavior.
- Used pre-built container images stored in a private Harbor registry as execution artifacts, ensuring reproducibility and isolation of grading environments.
- Integrated WireGuard-based VRF isolation to provide per-user network environments for safe multi-tenant evaluation. - [github](#) - [github](#)

ELK-based Log Analytics & Observability Platform

2024

- Designed and deployed a distributed ELK Stack (Elasticsearch, Logstash, Kibana, Filebeat) for large-scale log ingestion and analysis.
- Implemented index lifecycle management (ILM) with hot/warm/delete phases to balance query performance and storage cost.
- Tuned Elasticsearch sharding, JVM, and Logstash pipelines to handle high-concurrency workloads.
- Achieved ~500 log writes/sec on a single-node setup (1 vCPU, 8GB RAM) and ~300 queries/sec on a dual-node cluster.
- Built automated alerting pipelines and integrated notification delivery via LINE Bot and custom webhooks.
- Explored semantic log search and anomaly detection using Elasticsearch ML and dense vector embeddings. - [hackmd](#)

HomeLab Infrastructure Platform

2021

- Built a full virtualization stack using Proxmox with DNS, mail, web services, and LDAP-based identity management.
- Implemented NFS-backed shared storage and GPU passthrough via PCI.
- Operated multi-VM networking and access control for service isolation.

- Built a Go REST API (gorilla/mux) providing per-user recommendation list update and paginated reads with cache.
- Implemented cache invalidation via a per-user listKey: stored UID->listKey and listKey+pageIndex->page JSON in Redis to avoid repeated database reads.
- Stored recommendation state in PostgreSQL (UID, listKey, AID[] array) and refreshed listKey on each list update to invalidate stale pages deterministically.
- Containerized local development dependencies using Docker Compose (API + Postgres + Redis). - [github](#)

CPE service maintain

2024

- Took ownership of a production web service (CPE Registration System), responsible for service availability, operational integrity, and user-facing reliability.
- Led post-handover investigation of a critical service integrity incident, identifying abnormal behavior involving certificate trust and upstream infrastructure dependencies.
- Traced issues across multiple infrastructure layers, including TLS/CA trust chains, DNS resolution paths, and IPv6 network environments.
- Identified incomplete DNS trust-chain propagation, including misaligned DNSSEC configuration and inconsistent DoT/DoH resolution behavior, contributing to service integrity and validation failures.
- Performed deep inspection of application runtime and configuration, discovering unauthorized code injection and coordinating immediate containment and remediation actions.
- Expanded investigation scope to related academic systems and identified multiple legacy deployments exposed to known CVEs due to long-term patching gaps, indicating systemic infrastructure risk.
- Compiled technical findings, root-cause analysis, and risk assessments, and communicated incident context and remediation considerations to internal stakeholders and external solution architecture personnel at a national digital governance authority.
- Supported follow-up remediation efforts, documentation, and operational improvements to strengthen overall service reliability and security posture. - [website](#)

Work Experience

W.S. Security Co., Ltd. (Part-time)

2024

- Designed and implemented a honeypot-driven security alert system integrated with internal banking APIs, enabling administrators to define customer profiles, alert groups, and automated response workflows.
- Built a high-throughput packet capture and query service; replaced inefficient Python packet-processing libraries with direct tcpdump/editcap command execution to improve capture performance and system stability.
- Designed a filesystem-aware pcap storage architecture to respect node-level limitations: avoided placing excessive files in a single directory by rotating packet files into time-based subdirectories, preventing inode pressure and directory lookup degradation.
- Implemented an hourly metadata indexing mechanism (JSON) mapping source/destination IPs to timestamps and pcap file locations, enabling efficient lookup without scanning large binary files.
- Implemented crash-recovery logic to reconstruct missing hourly index files after service interruption based on time boundaries.
- Optimized query performance using binary search over indexed metadata, reducing multi-GB packet scan time from several seconds to sub-second latency (~0.2s).
- Implemented streaming-based pcap delivery to the frontend, minimizing memory usage and enabling retrieval of large datasets exceeding 2GB without loading entire files into RAM.

Co-Founder & Infrastructure Engineer — Straitport Ltd.

2023–2024

- Designed and implemented a self-hosted IaaS platform based on libvirt, enabling programmatic VM provisioning with fine-grained control over networking, bandwidth limits, and storage through an object-oriented XML abstraction layer.
- Built a domain-specific infrastructure abstraction that dynamically converts high-level VM specifications into libvirt domain XML, supporting reproducible and automated VM lifecycle management.
- Developed a cloud-init provisioning service to bootstrap virtual machines with deterministic identity and network configuration, including hostname, MAC address, static IP assignment, and OS image mapping, forming a stateless provisioning pipeline.
- Implemented an API-driven DHCP control plane in Go, supporting subnet calculation, MAC-to-IP mapping, and centralized network configuration management for virtualized environments.
- Designed a secure on-demand VNC access service with dynamic allocation of ephemeral ports and per-session credentials, safely exposing VM consoles in a multi-tenant environment.
- Integrated LDAP-based authentication and Golang-based SSO services to manage user identity, access control, and VM ownership across the infrastructure stack.
- Participated in end-to-end infrastructure system design, covering virtualization, networking, identity management, and automation workflows for academic and internal cloud use cases.

Awards in Algorithm Competitions

ICPC Asia Pacific Championship

Hanoi, Vietnam

2024



ICPC Asia Pacific Championship

icpc | International Collegiate Programming Contest



The 2024 ICPC Asia Pacific Championship

| February 29 - March 3, 2024 |

VNU University of Engineering and Technology

The 2024 ICPC ASIA PACIFIC CHAMPIONSHIP
VNU University of Engineering and Technology
Building E3, No 144 Xuan Thuy street, Cau Giay Dist., Hanoi, Vietnam
Phone: +84 3754 7461
Email: uet@vnu.edu.vn

To: Mr. Yuh-Pyng Shieh
Ming Chuan University

January 8, 2024

Dear Mr. Yuh-Pyng Shieh,

It is my pleasure to congratulate to your team's performance in the regional contest and being qualified to **the 2024 ICPC Asia Pacific Championship** which will be held on **29 February** ~ **3 March 2024**, at **VNU University of Engineering and Technology** (144 Xuan Thuy Street, Cau Giay District, Hanoi, Vietnam). I would like to extend a formal invitation to your team to participate in the contest.

This letter confirms that the round trip airfare, accommodation in Hanoi and registration fee is the responsibility of your team.

Required team attendance includes the Opening Ceremony, the Practice Session, the Asia Pacific Championship Contest, Awards Ceremony and Sponsor Events.

Hotel, transportation information, schedule and activities can be found on the website: <https://icpc.asia>.

We wish you safe travels to Hanoi, Vietnam and good luck in your competitions.

For details, visit the 2024 ICPC Asia Pacific Championship section of the ICPC Website at <https://icpc.asia>. If you have any questions, please contact us at acmicpc.vietnam@gmail.com.

We look forward to seeing you at the 2024 ICPC Asia Pacific Championship!


Sincerely Yours,

Chu Duc Trinh, Prof.,
★ Rector
VNU University of Engineering and Technology

The 2024 ICPC Asia Pacific Championship
VNU University of Engineering and Technology
No. 144 Xuan Thuy street, Cau Giay Dist, Hanoi City, Vietnam

Web: [https://icpc.asia/](https://icpc.asia)
Email: acmicpc.vietnam@gmail.com

Person invited to the 2024 ICPC Asia Pacific Championship
from VNU University of Engineering and Technology

Mr. Yuh-Pyng Shieh,
Coach

Mr. Jin-Jia Zheng,
Contestant

Mr. Bing-Jie Liu,
Contestant

Mr. Jui Cheng Teng,
Contestant