Tan Hiok Kuek

Currently interested in System Design

+65 87966816 | ernest.tanhk@gmail.com | hiok.dev | [Linkedin](https://linkedin.com) | [Github](https://github.com)

EDUCATION

National University of Singapore — Aug 2024 – Jan 2028

Bachelor of Computing in Computer Science (Cumulative GPA 4.64)

- Ngee Ann Kongsi Scholarship for AY 25/26
- Peer Mentor for Science & Technology Scholars

WORK EXPERIENCE

Undergraduate Teaching Assistant (CS2030S) – *NUS School of Computing* — Jan 2026 – Present

- Facilitating lab sessions for **Programming Methodology II**, covering **Object-Oriented Programming** and **Functional Programming** abstractions in Java (Monads, Functors, etc.).
- Mentoring 20+ students in developing robust software designs, focusing on **CS fundamentals**, recursion, and type systems.

Research Assistant – *NUS-NCS Cybersecurity Lab* — Aug 2024 – Aug 2025

- Sole frontend engineer owning architecture, performance, and delivery for a production platform used by **10,000+ users**.
- Reduced AWS Cost by **50% ($200/day to $100/day)** through scalable architecture and automation using **cloudwatch**.
- Built backend AI workflows using **Python and modern LLM orchestration tool** to detect phishing emails.
- Designed customer-driven dashboards enabling comparison between workflows, activity tracking and decision-critical insights.
- Built cross-platform **browser extension** bundled with a **native host**, that supports **on-premise** email phishing detection.
- Stabilised production systems by migrating AWS infrastructure over to Terraform under tight deadlines.

Deputy Head Ops and Security Officer – *Singapore Armed Forces* — Jan 2023 – Nov 2023

- Managed operations and security for a unit of **300+ personnel**, coordinating complex training logistics and data security.
- Recognized with multiple honors including **Sword of Merit** and **Commanding Officer's Coin** for operational excellence.

TECHNICAL PROJECTS

Agentic Social Media Content Generator – *AI Agents & LLM Orchestration* — Sep 2025

- Engineered an **autonomous AI agent pipeline** using **LangSmith**, **GPT-4**, and **Claude** to scrape Reddit data, perform sentiment analysis, and generate creative scripts with automated quality checks.
- Implemented comprehensive tracing and monitoring to optimize LLM cost and performance for production-ready agents.

HomeLab Infrastructure – *Personal Server & Automation* — Jul 2025

- Architected a Linux-based home server environment with **Docker** for containerized services, managing automated backups and private cloud storage.
- Deployed secure remote access using **Cloudflare Tunnels** and managed network traffic for self-hosted instances.

Tanbucha – *E-commerce Platform* — May 2025

tanbucha.com

- Built responsive e-commerce platform with **Next.js** and **TypeScript**, implementing mobile-first design patterns.
- Integrated **Stripe API** for payment processing and **EmailJS** for automated customer notifications.
- Achieved **50+ organic visitors** and **100+ sales** through SEO optimization and performance tuning.

HONORS & TECHNICAL COMPETITIONS

- NUS Hackers Hack&Roll (1st)
- SplashAwards 2023 (1st)
- SUTD WhatTheHacks 2023 (1st)
- CloudHacks 2023 (1st)
- GroundZero 2024 (Finals)
- NUS CHS Case Comp (Finals)

SKILLS & INTERESTS

Languages: Python · Java · Javascript/TypeScript/HTML/CSS (TypeScript) · SQL

Tools & Frameworks: React, Next.js, Plasmo · Flask · OpenAI, LangChain, LangSmith · Docker, Terraform · PostgreSQL

Certifications: [AWS Certified Solutions Architect - Associate (SAA-C03)](https://aws.amazon.com)

Interests: Applied AI · Machine Learning · Full-Stack Development · Cloud Computing