

Kulpatch Chananam

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Personal Statement

Penultimate-year Computer Science & Economics student at Nanyang Technological University, passionate about applying technology, quantitative finance, and data to solve problems. Committed to growth through new challenges. **Seeking a Summer Internship (May–Aug 2026) to contribute meaningfully to a forward-thinking organization..**

Experience

- Data Analysis & Algorithm Optimization Intern** — ST Engineering Geo-Insight, Singapore May 2025 — Jul 2025
- Developed satellite tracking workflows using **SGP4** and **Orekit (Java)** with 20–50 TLEs to compute AOI visibility schedules, achieving ± 10 s timing accuracy via ECEF–WGS84 transformations.
 - Optimized satellite tasking via Greedy AOI assignment and Dijkstra routing, reducing computation time from ~18 mins to 30 s (36× **faster**); simulated SAR field-of-view access for over 200 AOIs using **Skyfield** and **Cartopy**.
 - Built Python pipelines with **pandas** and **Folium** to process 2 TB+ AIS datasets, increasing submarine cable mapping resolution from 50 to 5,000 points through chunked processing and geographic filtering.
 - Created **C++ OpenCV** system combining ORB, Farneback optical flow, and YOLO, boosting moving object detection precision from 85% to 96% while maintaining sub-second frame processing.
- Publicity & Publication Executive** — NTU Students’ Computing & Data Science Club Sep 2024 — Present
- Led content creation, social media strategy, and visual design, increasing online engagement by 40%.
- Teaching Assistant** — Astronomy Olympiad Camp 2023
- Conducted lectures and practice sessions for 30+ national team trainees, improving problem-solving performance in mock exams by 15%

Education

- Nanyang Technological University** — Computer Science & Economics (Double Degree) Aug 2023 — May 2027
ASEAN Undergraduate Scholarship. Minor in Mathematics: Probability & Statistics, Calculus III, Linear Algebra, Stochastic Processes.
Relevant coursework: Algorithm Design, Object-Oriented Design, Software Engineering, Operating Systems, Computer Networks, Machine Learning, Artificial Intelligence, Game Theory, Microeconomics, Macroeconomics, Econometrics.
- University College London (UCL)** — Summer Programme Jun 2024 — Aug 2024
Courses: Data-Driven Web-based Applications; Data Science & Big Data Analytics.

Projects

- Tokbokki** — Kotlin Dependency Visualization Tool (TikTok TechJam 2025 Finalist, Top 12)
- Built with **Next.js**, **React Flow**, and **Dagre** for interactive dependency graph analysis.
 - Implemented **GitHub OAuth**, cycle/heavy node detection, and AI-powered refactoring suggestions.
- Paw Patrol** — Predictive Policing & Patrol Optimization (NTU Port 63 Hackathon)
- Built **Django+TensorFlow** system with real-time heatmaps, routing, and data validation.
 - Optimized patrol planning, achieving projected **40% crime reduction** and **35% faster response**.
- HealthLib** — ML-Powered Healthcare Management Platform (NTU CAMpcode × ST Engineering Hackathon, 2024)
- Designed responsive UI/UX with **React**, **TailwindCSS**, and **Google Maps API**.
 - Built **PyTorch**-powered time estimation with **federated learning** for healthcare privacy.
- Real-v-Fake** — Community-Driven Fake Product Detection Web App
- Developed **FastAPI** backend with **Supabase** for authentication and data storage.
 - Used **Hugging Face** models for e-commerce fake product detection.
- Sawasdee-AMP** — Portable Point-of-Care RNA/DNA Test Kit
- IoT Laundry System** Created Arduino + light-sensor solution with web app integration to reduce dormitory laundry queue congestion.

Achievements

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| Finalist (Top 12) — TikTok TechJam | 2025 |
| 3rd Place — NTU Port 63 Hackathon (Paw Patrol) | 2024 |
| 2nd Runner-Up — NTU CAMpcode × ST Engineering Hackathon (HealthLib) | 2024 |
| Gold Medal — WorldQuant Challenge | 2023 |
| 1st Place USAID Special Award & 4th Place Grand Award — Regeneron ISEF (Sawasdee-AMP) | 2022 |
| Silver Medal — International Olympiad on Astronomy & Astrophysics (IOAA) | 2022 |
| Most Globally Sustainable Award — International Student Science Fair | 2022 |
| Gold Medal — Thailand Astronomy Olympiad | 2021, 2022 |
| Gold Medal — American Mathematics Competitions | 2021 |
| National Gold Award — Thai OBEC Mathematics Competition | 2019 |

Skills

- Languages:** C++, Python, C, Java, JavaScript, PHP, SQL, R, HTML, CSS, Verilog
- Libraries/Frameworks/Tools:** Pandas, NumPy, PyTorch, TensorFlow, XGBoost, OpenCV, YOLO, TailwindCSS, React, Next.js, React Native, FastAPI, Google Maps API, Folium, Cartopy, Git, Linux, Vercel
- Topics & Methods:** Monte Carlo Simulation, Reinforcement Learning, Quantitative Finance, Markov Chain