

# Lim Dillion

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## SUMMARY

Analytical and driven software engineer skilled in optimization, algorithms, and mathematics, with a track record of building scalable, high-performance applications. Thrives on rapid learning and applies sharp problem-solving skills to deliver innovative, reliable solutions.

## TECHNICAL SKILLS

**Programming Languages:** C++, Python, Rust, JavaScript (React, Node.js, Nest.js, Next.js, TypeScript)

**Machine Learning Libraries:** Whisper, Ultralytics (YOLOv8, YOLOWorld), PyTorch, TensorFlow, Nvidia NEMO, RLLib

**Tools:** PostgreSQL, MongoDB, Google Cloud Firestore, AWS (S3, SQS), Git, GitHub Actions, ROS, Docker, Kubernetes

## EXPERIENCE

### Incoming Quantitative Trading Intern

Optiver

May 2026 – Jul 2026

### SWE / ML / Quantitative Trading Intern

Almanak

Jan 2025 – Aug 2025

NestJS, LangGraph, Kubernetes, Web3, Websockets, Multiprocessing

- Developed an agentic team pipeline, automating end-to-end development, testing and deployment of quantitative trading strategies in <5 minutes, reducing manual backtest workload by 85% (saving 250 man-hours per month).
- Optimized recursive file-tree diff algorithm, cutting dynamic update latency from >2s to <100 ms, reducing update times by over 95%.
- Implemented multithreaded execution for backtesting, strategy generation, and file-watching, boosting pipeline processing speeds by >75%.

### Robotics / AI / Fullstack Software Engineer

Republic of Singapore Air Force (RSAF), RAiD Department

ROS, Whisper, Large Language Models (LLMs), React, Cloudflare D1

Mar 2023 – Aug 2025

- Engineered high-fidelity 3D simulations replicating Google Earth environments to sub-meter accuracy in Unreal Engine 5, and integrated a self-written ROS C++ package as a publisher for an end-to-end drone reinforcement learning pipeline;
- Researched on application of LLMs for efficient searching and ranking of results from both online resources and private codebases, with search results having a user-rated relevance of 82%, presented at ICMCIS 2025, published in Springer;
- Finetuned Whisper Turbo model for near-real-time, accurate transcription of Air Traffic Control communications with Asian accents, achieving a 0.096 WER and 0.01 RTF, presented at ICMCIS, published in Springer.

### Robotics Intern

Defence Science and Technology Agency (DSTA)

Jan 2023 – Mar 2023

Python, Gurobi API, ROS

- Developed a novel 95% accurate approximation algorithm for the NP-hard maximum coverage problem using linear programming, to achieve polynomial-time efficiency and over 500% reduction in runtime. Integrated the algorithm into a ROS2 package;
- Integrated this package onto a robotic fleet with visual simultaneous localization and mapping (SLAM) using a RGBD camera.

## PROJECTS

### Singapore Chemistry League

Contest Management System

Mar 2023 – Jul 2024

Next.js, MongoDB, PostgreSQL, AWS, SES, Websockets

- Designed a scalable platform with load balancing, auto-scaling, and caching mechanisms to support over 800 concurrent users during a national-level competition and deployed on AWS, delivering 100% uptime for over 10,000 submissions with zero outages;
- Optimized performance by utilizing AWS Elastic Load Balancer (ELB) pre-warming, handling traffic spikes of up to 500 requests per second without delays, achieving sub-200ms response times.

### Excel2Message

Automated Message Sending

Jul 2024 – Sep 2024

Next.js, PostgreSQL, Qstash, AWS Lambda, S3, SQS

- Developed scalable platform to schedule and dispatch bulk SMS and email messages, leveraging Next.js, SendGrid and AWS S3.
- High-volume message processing using robust scheduling mechanisms (Qstash, AWS Lambda, SQS) for improved reliability and scalability.

## COMPETITIONS

### BrainHack Today-I-Learned

Hackathon involving Robotics and ML

June 2023, June 2024, June 2025

Whisper, NEMO Parakeet, YOLOv8, DistilBERT, GroundingDINO

- Placed 1st place in 2025 qualifiers involving ASR, NLP, OCR in a RL environment; Placed 1st in Surprise Challenge 2025 involving document reconstruction; Placed top 8 overall in 2023-2024, with 2023 involving maze navigation with object detection and object and speaker re-identification, and 2024 involving ASR and NLP, passed into a Visual-Language Model;

### NUS Hack&Roll 2025

Git Police

Jan 2025

Typer CLI, FastAPI, Ollama LangChain, DeepFace, NLTK

- Won "Most Annoying Hack" for a CLI tool that humorously enforces Git hygiene using facial recognition and LLMs.

## EDUCATION

### National University of Singapore

Double Degree Program (B. Comp. in Computer Science and B. Sc. in Mathematics)

Aug 2025 - Present

GPA: 5.0 / 5.0

- Offered the NUS Global Merit Scholarship, Teaching Assistant for CS1010X (Programming Methodology I).

### Hwa Chong Institution

GCE A-Level

2017 – 2022

Perfect UAS 90 with H3 Distinction (AAAA/AA+Distinction)

- Direct admission into the Science and Mathematics Talent Programme, offering a highly rigorous math and science curriculum;
- Represented Singapore in the International Science and Engineering Fair (ISEF) 2021 (4th placing);
- Singapore Science and Engineering Fair (Gold, 2021, published in Springer); Singapore Mathematical Olympiad (Silver, 2020);
- Top in H2 Chemistry (2022), 3rd in Level (2019), Annie Tan Bilingual Award (2019), Top in Mathematics (2017).

## CERTIFICATIONS

Certified Cisco Network Associate (CCNA); Google Cloud Professional Machine Learning Engineer