

# Lim Dillion

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## SUMMARY

Passionate software engineer with a strong background in optimization, algorithms and mathematics. Proficient in developing scalable, high-performance applications. Ability to learn quickly and independently, and adapt to fast-paced environments. Seeking to apply my technical skills and problem-solving abilities in a challenging engineering role.

## TECHNICAL SKILLS

**Programming Languages:** C++, Python, Rust, Javascript (React, Node.js, Next.js, Typescript)

**Machine Learning Libraries:** Whisper, Ultralytics (YOLOv8, YOLOWorld), PyTorch, Tensorflow

**Tools:** PostgreSQL, Cloudflare D1 Database, MongoDB, Google Cloud Firestore, AWS (S3, SQS), Git, Github Actions, ROS

## EXPERIENCE

### Robotics / AI Engineer

July 2024 – Present

*Republic of Singapore Air Force (RSAF), RAiD Department*

*ROS, C++, Python, Whisper, Large Language Models*

- 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 Large Language Models for efficient searching and ranking of results from a combination of online resource, and local and private code databases, with search results having a user-rated relevance of 82%;
- 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.

### Full-Time National Serviceman

March 2023 – Present

*Republic of Singapore Air Force (RSAF)*

*React, Node.js, Cloudflare D1 Database, Google Cloud Firestore*

- Rapidly developed secure web applications using React, Node.js, and Cloudflare D1 Database, deployed on Cloudflare Pages during Exercise Wallaby 2024, used by the whole SAF transport formation and RSAF;
- Built a mileage data processing platform, processing over 10,000 monthly mileage edits, and an automated fuel receipt tallying system integrated with the Shell web portal, tallying 1,000+ fuel receipts. Achieved 100% uptime.

### Intern

January 2023 – March 2023

*Defence Science and Technology Agency (DSTA)*

*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

March 2023 – Present

*Contest Management System*

*Next.js, MongoDB, AWS*

- 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.

### BrainHack Today-I-Learned

June 2023, June 2024

*Hackathon involving Robotics and ML*

*Whisper, DistilBert, GroundingDINO*

- Placed top 10 in both years, with 2023 involving a maze navigation challenge with object detection and object and speaker re-identification, and 2024 involving ASR and NLP, passed into a Visual-Language Model;
- Finetuned Whisper and used DistilBert to achieve 0.9998 accuracy, finetuned GroundingDINO to achieve 0.864 IoU@0.5.

## EDUCATION

### National University of Singapore

August 2025

*Incoming Freshman, Double Degree Program (B. Comp. in Computer Science and B. Sc. in Mathematics)*

- Offered the NUS Global Merit Scholarship, which is offered to the top 1% of applicants.

### Hwa Chong Institution

2017 – 2022

*GCE A-Level*

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

- Direct admission into the Science and Mathematics Talent Programme, offering a more 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); 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)