

# Ma Weiyi

[fwyr.dev](https://fwyr.dev) | [linkedin.com/in/fwyr](https://linkedin.com/in/fwyr) | [github.com/fwyr](https://github.com/fwyr)

## EDUCATION

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### Dunman High School

2020 – 2025

*H2 & H3 Physics, H2 Mathematics, H2 Further Mathematics, H2 English Literature*

- Awarded the DSTA Junior College Scholarship and the MOE Engineering & Tech Programme Scholarship.
- Vice-chairperson of Infocomm Club, Committee Lead of Science Society, and member of Robotics Club.

## EXPERIENCE

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### Student Researcher

Jan. 2024 – Mar. 2025

*A\*STAR Institute of High-Performance Computing*

- Developed a cost-effective adjoint-based optimisation process of wide-angle achromatic metalenses to enhance optical performance across broad wavelengths and incident planewaves.
- Implemented computational electromagnetic simulations using FDTD solvers to refine nanophotonic devices.

### Executive Committee Member & Admin Lead

Dec. 2022 – Jan. 2025

*BuildingBloCS*

- Oversaw nationwide conferences with more than 300 attendees and facilitated smooth internal operations, while presenting workshops on computer vision and data analytics.
- Managed participant details, organisational budgeting, and effective communication with team members.

### Research Intern

Aug. 2023 – Dec. 2023

*DSO National Laboratories*

- Conceptualised and built bespoke magnetic coil configurations that achieve steady homogenous fields across more than 70% of coil diameter.
- Performed numerical optimisation using Python to minimise noise and enhance signal-to-noise ratios in quantum-based applications, such as cold atom interferometry.

## PROJECTS

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### On the Critical Density of Minesweeper Boards | *Python, SAT-based prototyping*

Mar. 2023 – Apr. 2024

- Developed a PySAT-based solver to characterise Minesweeper as a constraint satisfiability problem.
- Used probabilistic combinatorics for inferred guesses, while analysing simulation results to deduce key trends.

### REALISER | *Python, Flask, Tensorflow, Keras, Heroku*

Jul. 2021 – Nov. 2021

- Developed a back-end microservice application using with Flask serving a REST API.
- Trained an NLP regression model on news articles to discern misinformation from factual reporting.
- Emerged as one of 12 finalist teams for Splash Awards.

## ACHIEVEMENTS

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### Olympiads

- **Silver:** National Olympiad in Informatics, Singapore Physics League, Singapore Junior Biology Olympiad
- **Bronze:** Singapore Mathematics Olympiad, Singapore Chemistry League, Singapore Junior Physics Olympiad

### Research

- Awarded Silver for Singapore Science & Engineering Fair and Singapore Mathematics Project Festival.
- Designated as a project exhibitor at the 2024 Young Defence Scientists' Programme Congress.

### Competitions

- Clinched 4th for RoboRoarZ and attained Bronze at the World Robot Olympiad.
- Clinched 2nd for HACK@AC, 5th for Sieberrsec, and 10th for BlahajCTF.

## TECHNICAL SKILLS

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**Areas of Interest:** Artificial Intelligence, Data Structures & Algorithms, Cybersecurity, Embedded Systems

**Languages:** Python, C++, JavaScript, HTML/CSS

**Tools & Frameworks:** Git, VSCode, Vue.js, Flask, PyTorch