

Cao Xizhen

What's bigger than a tuna? A threena.

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ABOUT ME

Hello! I am a JC1 student from Hwa Chong Institution, currently a member of Hwa Chong Infocomm & Robotics Society, and previously a member of Nanyang Infocomm Club. I have also been in the MOE Art Elective Programme since 2021. I love maths, science research, and Gamedev; I'm also deeply passionate about cybersecurity, computer science, and fine art.

ACHIEVEMENTS

2025

- GreyCTF Top 5 Finalist
- CDDC Finalist
- 3rd Place in NES Connect 2025
- 3rd Place in Articulation Prize 2025

2024

- Winner of JP Morgan GenerationTech 2024
- Singapore Maths Project Festival 2024, Bronze
- Finalist at National Olympiad in Informatics (NOI 2024)
- SMO Open Honourable Mention
- 4th place in Sentinel Challenge 2024
- Urban Redevelopment Authority(URA), awarded Lively Places Fund
- Recipient of Nanyang Honour Roll
- Top 5% in cohort for Mathematics & Physics
- Climate Fresk 2024, Green Award

2023

- SMO Open & Senior Honourable Mention
- Mathematics research project in Number Theory & Cryptography
- Participated in UOB Painting of The Year
- Participated in Sentinel Challenge 2023

2022

- Distinction for Mathematics Research Project on probability & combinatorics
- SMO Junior Bronze

EXPERIENCES/PROJECTS

- **Science Research**
 - Student researcher under Centre for Quantum Technologies (CQT) and the HCI CenTaD research Programme
 - Research scope: Optimization of CVQKD key rates (continuous variable quantum key

distribution) and various other protocols under noisy conditions, using finite key analysis.

- **Mathematics research**
 - Project on cryptanalysis techniques & number theory in 2023 & 2024
 - Project on probability & combinatorics, developed an algorithm to solve Wordle in 2022
- **SiebrsecCTF 2025**
 - Overall organising team for SCTF 6.0
 - Publicity Head, challenge setter and planner for the competition.
- **HCI CTF 2025**
 - Challenge setter and planner for the competition.
- **Service Learning Project**
 - Project Small Bytes
 - Teaching primary 5 level schoolchildren Python programming and web development
- **Sentinel Programme**
 - Enrolled in the Sentinel Pilot Programme from 2022 - 2023
 - Awarded Certificate of Achievement
- **HCI Art Elective Programme (HCAEP)**
 - Went on overseas immersion trip to Japan in June 2025
 - Previously enrolled in NYGH Art Elective Programme, since 2021
 - Went on overseas immersion trip to Taiwan in May 2024
 - Awarded MOE Art Elective Programme Scholarship (Secondary 1-4)

SKILLS & INTERESTS

- **Game Development**
 - Proficient in Unity & Unreal Engine
 - Proficient in Blender & 3D Modelling
- **Programming languages**
 - C#
 - C++
 - Python
 - Javascript/HTML/CSS
- **Cybersecurity**
 - Cryptography
 - Advanced modular arithmetic
 - Intimately familiar with cryptosystems such as Lattice, RSA, ECC and AES
 - Open-source Intelligence
 - Familiar with tools such as Maltego & Sherlock
- **Competitive Programming**
 - Familiar with various medium-level algorithms & competitive programming skills
- **Quantum Computing**
 - Familiar with various Quantum Key Distribution protocol implementations such as BB84, E91, MDIQKD, etc.
 - Proficiency in software and Python libraries such as Qiskit, Netquid, Matplotlib/Matlab, and QuTiP.
- **Interests**
 - I like to read and hike in my free time

- I am also very passionate about fine arts & sculpture/3D media
- I am passionate about spreading awareness on cybersecurity and computer science. Despite the fact that many people may think that Art is a subject that would never intersect with CS/Cybersecurity, I would like to show people that both can, indeed, co-exist, and they can work together to form new and amazing things, such as in gamedev!