Frank Xiang

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Education

Academic Qualifications

University of Wisconsin–Madison — **Madison, US**
Undergraduate student in Computer Science, — *Jan 2025 - Expected 2026*

The Hong Kong Polytechnic University — **Hong Kong**
Undergraduate student in Computing and AI, — *Sep 2023 - Dec 2024*

HS Affiliated to Renmin University of China — **Beijing, China**
High school student, — *Sep 2020 - Jul 2023*

Awards and Scholarship

- HKSAR Government Scholarship 2024/25 (HKD 80,000) — Dec 2024
- Gold Medal Winner (7th Place) in The 2024 ICPC Asia Nanjing Regional Contest — Nov 3, 2024
- Gold Medal (10th Place) of AStar (The 19th Baidu Star Programming Competition) — Dec 2023
- Silver Medal (12th Place) of The 2023 ICPC Asia Macau Regional Contest — Nov 2023
- Represented Beijing A Team (3rd) at the 39th National Olympiad in Informatics (NOI 2022) — Aug 2022
- Gold Medal Winner in Byte-Dance Byte Camp 2022 — July 2022
- Gold Medal Winner in the 16th Asia and Pacific Informatics Olympiad (APIO 2022) — May 29, 2022
- 2nd Place in Tsinghua University Programming Contest (THUPC) 2022 — May 2022
- 1st Prize (Gold Medal) of the 39th National Olympiad in Informatics Winter Camp — Jan 28, 2022
- 12th Place of 2021 Huawei ICPC Communication Routing Challenge — Oct 2021
- Silver Medal Winner in the 38th National Olympiad in Informatics (NOI 2021) — July 29, 2021
- Platinum Winner (1st place) in US OPEN of USA Computing Olympiad (USACO) — Apr 2021

Experience

Undergraduate Research in Vector Database Management System — **PolyU, Hong Kong**
Supervised by Prof. Jieming Shi — *Sep 2024 - Apr 2025*

- Researched RFANNS problems in vector databases, focusing on HNSW-based graph indexing.
- Designed a range-filtering nearest neighbor algorithm combining a first-split range strategy and three-segment HNSW structure, achieving significantly better efficiency and accuracy than prior methods across diverse high-dimensional datasets.
- Paper under review at SIGMOD 2026.

Organizer of Poly Competitive Programming Club — **PolyU, Hong Kong**
Student Assistant of COMP Programming Team; Supervised by Prof. Bo Li — *Jan 2024 - Dec 2024*

- Initiated a sustainable computing club within the PolyU Department of Computing.
- Created a Discord server to provide resources and support for new club members.
- Created and assigned training sessions (Codeforces, QOJ, UCUP) to improve competitive programming

skills.

Administrator of QOJ and Universal Cup

○ *https://qoj.ac/user/profile/MoRanSky*
https://contest.ucup.ac/user/profile/MoRanSky   *Dec 2023 - Apr 2024*

- Converted problem formats using Tuack to migrate datasets between UOJ and QOJ systems.
- Manage problem system and upload problem data (UOJ - QOJ format)

SureFire UAV (unmanned aerial vehicle)   **PolyU, Hong Kong**
○ *Responsible for Computer Vision; Supervised by Prof. Qixin Wang*   *Nov 2023 - May 2024*

- Contributed to the SureFire project on smart urban resilience and firefighting, focusing on UAV-based visual perception.
- Evaluated camera calibration (pinhole, SFM, MVS) and point cloud registration algorithms (ICP, FMR, DGR).

Tencent Spark Challenge Week   **Tencent Headquarters, Beijing**
○ *Computer Vision Direction*   *Aug 2023*

- Completed the gesture recognition program through model training (MobileFaceNets, ResNet) and actual testing (Using MediaPipe Landmark by Google) in Python.

Projects

Competitive Programming Template
○ *Source: https://github.com/DMoRanSky/cp-template*   *Feb, 2021 -*

It's designed and extracted from my 5000+ competitive programming problems submission and contains 3500+ lines using C++, which includes all mainstream knowledge.

Sixteen Kingdoms Card   **Beijing**
○ *Runner up of the "Discovery Cup" Youth Programming Challenge*   *2017*

Independently developed a Landlord game using front-end language (HTML/JavaScript/CSS), which combines the historical themes of the Sixteen Kingdoms and contains 2000+ lines of code.

Split Machine
○ *Minecraft Plugin, source: https://github.com/DMoRanSky/splitmachine*
https://gitee.com/moran_sky/SplitMachine   *Jan, 2017*

A plug-in of Minecraft Server for dismantling items in the original environment was developed using Java language.

Technical and Personal skills

○ **Programming Languages:** C++, Python, JavaScript, Java, HTML, CSS

○ **Languages:** Chinese, English