

JAM KABEER ALI KHAN

[GitHub](#) · [LeetCode](#) · [Personal Website](#)

jamkhan@connect.hku.hk · (+852) 6902 3473

EDUCATION

Undergraduate

- University of Hong Kong**
BEng Computer Science with minor in Mathematics
Major GPA: 3.57
Hong Kong SAR
Expected Graduation: July 2025
- Northeastern University**
BSc Computer Science and Mathematics (Semester Exchange)
GPA: 3.92
Boston, USA
Spring' 2024

RESEARCH EXPERIENCE

Max Planck Institute for Security & Privacy Bochum, Germany
Research Intern - *full-time* Supervisor: Gilles Barthe
Tech: **OCaml, Coq** April - Present

- Working on the research of quantum data structures compilation to LLVM which could potentially be represented as Quantum Circuits.

HKU Programming Languages Group Hong Kong SAR
Undergraduate Thesis Supervisor: Bruno C. d. S. Oliveira
Tech: **Haskell & Coq** July 24 - April 25

- Designed & implemented a programming language with *first-class* environments, capabilities & separate compilation.
- Formalized type-directed elaboration to a core calculus in Coq and made a submission to PLDI'25 SRC.

HKU Quantum Information and Computation Lab Hong Kong SAR
Research Intern - *full-time* Supervisor: Ravi Ramanathan
Tech: **Python, Matlab, Julia & CVXPY** June - Aug 24

- Found Bell's inequality maximally violated by simplex projections, and worked on self-testing proofs.
- Certified randomness generation using convex optimization techniques in CVXPY, MATLAB, and Julia.

HKU Sleep Lab Hong Kong SAR
Student Research Assistant - *part-time* Supervisor: Shirley X. LI
Tech: **Java, Objective-C, Android Studio, XCode & XML** April - Oct 22

- Migrated codebase to AndroidX, integrated ExoPlayer, reduced server load by **80%** via caching.
- Debugged iOS app, fixed connectivity/audio/video issues, implemented multi-threading for performance.

INDUSTRY EXPERIENCE

ActusRayPartners Limited Hedge Fund Hong Kong SAR
Technology Intern - *full-time*
Tech: **Python, MSSql, PyUnit, VBA & Flask** June - Aug 2023

- Developed a Python database library, increasing efficiency by 40% with reduced data corruption risk.
- Integrated VBA and Flask to enable real-time saving/loading in trade tech, ensuring trader synchronization.

All Round Education Academy Hong Kong SAR
Software Developer (Freelance) - *part-time*
Tech: **JavaScript, ReactJS, NextJS, Redux & TailwindCSS** March - Nov 2023

- Developed an Ed-tech revision web app deployed to **30+ users** using Redux for caching and dynamic data storage.

SELECTED PROJECTS

EnvCap - Interpreter *Haskell*

- Designed and implemented a programming language with access control using capabilities as first-class modules.
- Supporting arithmetic, conditionals, recursion, and algebraic data types with separate compilation.

SLUG - Interpreter *Rust* - (*In-progress*)

- Building an interpreter for a toy programming language in Rust with support for static type checking, algebraic data types and functions etc.

Distributed Consensus Protocol RAFT *Python, UDP Sockets*

- Developed a distributed key-value store using the RAFT consensus algorithm.
- Ensured data consistency through leader election, log replication, and client request handling.

PUBLICATIONS

1. **Jam Kabeer Ali Khan.**
Capabilities as First-Class Modules with Separate Compilation.
Submitted to PLDI'25 Student Research Competition. Under Review

SKILLS

Programming Languages:	Python, Haskell, Gallina, Java, C/C++, Racket, JavaScript
Frameworks:	Flask, NextJS, ReactJS, ExpressJS, Flutter, Android Studio, TailwindCSS
Coursework:	Algorithms, Data Structures, Database, Networks, Functional Programming Programming Languages, Optimization Theory, Multi-variable Calculus, Number theory, etc

AWARDS AND HONORS

• HKU Undergraduate Entrance Scholarship for Outstanding Academic Talents	2022, 23, 24
• HKSAR Government Scholarship Fund	2021, 22, 23, 24
• UBS Hackathon: 3rd runner-up	2024
• Rosita King Ho Scholarship	2024
• Cathay Hackathon: 2nd runner-up - Won Free Ticket to Boston, USA	2023
• HKU Foundation Entrance Scholarship	2021-2022
• Top in Sindh and Balochistan, GCE A-levels Computer Science	2020
• Top in Sindh and Balochistan, GCE A-levels Physics	2020
• Best Across Three GCE A-levels, 2nd place in Pakistan	2020
• 100% Merit Scholarship GCE A-levels, Nixor College	2018-2020

OTHER EXPERIENCE

Teaching Assistantships

1. COMP2396 Object-oriented Programming and Java	Sept - Dec 24
2. COMP2396 Object-oriented Programming and Java	Sept - Dec 23
3. ENGG1340 Computer Programming II in C++	Jan - May 22

Leadership Experience and Volunteering

1. New College Programming Society, Founder & President	Sep 23 - Dec 24
2. New College Outdoor Club, Founder & President	Sep 22 - Dec 23
3. New College Events, Culture & Festivals Club, President	Sep 23 - Dec 23