

# JAM KABEER ALI KHAN

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

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## EDUCATION

<b>University of Hong Kong</b> BEng Computer Science and Mathematics Major GPA: 3.56	Hong Kong SAR Sep 2021 - June 2025
<b>Northeastern University</b> BSc Computer Science and Mathematics (Semester Exchange) GPA: 3.92	Boston, USA Jan 2024 - May 2024

## RESEARCH EXPERIENCE

<b>Programming Languages Group</b> Bachelor's Thesis supervised by Bruno C. d. S. Oliveira (Haskell   Coq   OCaml   Gallina)	Hong Kong SAR Aug 2024 - Present
<ul style="list-style-type: none"><li>Design and implementation of EnvCap programming language, incorporating capabilities as first-class modules in Haskell. Utilizing unit and property-based testing methodologies to ensure the correctness of the implementation.</li><li>Conduct an in-depth study on separate compilation and first-class environment-based semantics, employing formal methods in Coq to prove theorems and properties.</li></ul>	
<b>Quantum Information and Computation Lab (QICI)</b> CS Research Intern supervised by Ravishankar Ramanathan (Python   Matlab   Julia   CVXPY)	Hong Kong SAR June - Aug 2024
<ul style="list-style-type: none"><li>Performed numerical calculations using convex optimization techniques, e.g., Linear Programming, SDP Programming, and Duality, for certifying randomness generation using MATLAB and Julia.</li><li>Designed a Quantum Key Distribution Protocol by devising Bell's inequality maximally violated by simplex projections and proved its self-testing properties using Sum-of-Squares (SOS) decomposition.</li></ul>	
<b>HKU Sleep Lab</b> Research Assistant supervised by Shirley X. LI (Java   Objective-C   Android Studio   XCode   XML)	Hong Kong SAR March - Oct 2022
<ul style="list-style-type: none"><li>Migrated legacy code base from support to AndroidX libraries. Integrated ExoPlayer, optimized performance with caching, reduced server load by 80%, and integrated Mandarin language support and customized video player.</li><li>Debugged iOS app and removed server connectivity, audio, and video player bugs. Implemented multi-threading in mobile applications to improve user experience and performance. Developed a migration plan to Swift.</li></ul>	

## INDUSTRY EXPERIENCE

<b>ActusRayPartners Limited</b> Software Engineer Intern (Python   MSSql   PyUnit   VBA   Docker   Flask)	Hong Kong SAR June - Aug 2023
<ul style="list-style-type: none"><li>Developed an internal Python database management library using SQLAlchemy, Pandas, and MSSQL, improving efficiency by 40% and reducing data corruption risks. Integrated VBA and Flask to enable real-time saving and loading functionalities in trade technology, ensuring synchronization among traders.</li><li>Created multi-threaded applications to enhance processing times and optimize resource utilization, while applying solid software engineering principles such as design patterns and object-oriented programming.</li></ul>	
<b>All Round Education Academy</b> Full Stack Developer (JavaScript   ReactJS   NextJS   Redux   TailwindCSS   CSS   HTML)	Hong Kong SAR March - Nov 2023
<ul style="list-style-type: none"><li>Developed a full-stack Ed-tech revision web app and deployed it to 30+ users, implementing caching mechanisms using Redux-store for dynamic user data storage and retrieval, and followed test-driven development practices to ensure the reliability and maintainability of code.</li><li>Designed and implemented a secure authentication system using Auth0, leveraging Redux for state management, and conducted A/B testing to inform design decisions and enhance user experience.</li></ul>	

## TEACHING EXPERIENCE

<b>Department of Computer Science, HKU</b>	
• Student Teaching Assistant (COMP2396: Java)	Sept 2024 - Present
• Student Teaching Assistant (COMP2113/ENGG1340: C/C++)	Sept 2023 - Dec 2023
• Student Teaching Assistant (COMP2113/ENGG1340: C/C++)	Jan 2023 - May 2023

## SKILLS

Programming Languages:	Python, Java, C/C++, JavaScript, Haskell, Racket, Dart, VBA, Coq
Frameworks:	NextJS, ReactJS, ExpressJs, Flutter, Android Studio, TailwindCSS
Course Work:	Algorithms, Data Structures, Database, Networks, Functional Programming, etc.

PROJECTS

<b>SLUG Programming Language - Interpreter</b> <i>Racket</i> Graduate Project @ Northeastern. Toy language with bindings, functions, and conditionals using the functional paradigm.	
<b>BGP Router Simulator</b> <i>Python</i> Handling data packet routing, forwarding tables, IP addresses, and aggregation.	<a href="#">GitHub</a>
<b>FlyMate Mobile App</b> <i>Flutter, Dart</i> Travel app for people with disabilities won Cathay Hackathon '23 (Got a free ticket to Boston).	<a href="#">GitHub</a>
<b>Distributed Database</b> <i>Python</i> Implemented key-value store database using RAFT protocol from <a href="#">paper</a> .	<a href="#">GitHub</a>
<b>Linux Shell</b> <i>C</i> Linux shell with process creation, command execution, and support for piping commands using POSIX API.	<a href="#">GitHub</a>
<b>AI-Agent for Notakto</b> <i>C++</i> Implemented the algorithm from the following research <a href="#">paper</a> to create an unbeatable AI-Agent for Notakto.	<a href="#">GitHub</a>
<b>Card Game</b> <i>Java, Swing, OOP</i> Multiplayer Card Game with GUI for Big Two game.	<a href="#">GitHub</a>
<b>NFT Platform Mobile App</b> <i>Flutter, Dart</i> Prototype of an NFT marketplace with social media.	<a href="#">Github</a>

AWARDS AND HONORS

• <b>HKU Undergraduate Entrance Scholarship for Outstanding Academic Talents</b>	22', 23', 24'
• <b>HKSAR Government Scholarship Fund</b>	21', 22', 23', 24'
• <b>UBS Hackathon: 3<sup>rd</sup> runner-up</b>	2024
• <b>Rosita King Ho Scholarship</b>	2024
• <b>Cathay Hackathon: 2<sup>nd</sup> runner-up</b> (Free ticket to Boston)	2023
• <b>HKU Foundation Entrance Scholarship</b>	2021-2022
• <b>Top in Sindh and Balochistan, GCE A-levels Computer Science</b>	2020
• <b>Top in Sindh and Balochistan, GCE A-levels Physics</b>	2020
• <b>Best Across Three GCE A-levels, 2<sup>nd</sup> place in Pakistan</b>	2020
• <b>100% Merit Scholarship GCE A-levels, Nixor College</b>	2018-2020

LEADERSHIP AND VOLUNTEERING EXPERIENCE

<b>New College Programming Society, Co-Founder</b> Organized coding workshops and problem-solving sessions for ICPC, and interview preparation.	Sep 2023 - May 2024
<b>New College Outdoor Club, Co-Founder</b> Organized hiking, kayaking, and other outdoor activities to explore Hong Kong.	Sep 2022 - Dec 2023
<b>Events, Culture &amp; Festivals Club, Person-In-Charge</b> Led a team of 40+ members to organize and coordinate diverse cultural events, e.g. CNY, Eid, Diwali, and Halloween.	Sep 2023 - Dec 2023

REFERENCES

<b>1. Bruno C.d.S. Oliveira</b> Associate Professor, Department of Computer Science The University of Hong Kong Email: <a href="mailto:bruno@cs.hku.hk">bruno@cs.hku.hk</a> Phone: +852-2219-4800	
<b>2. Ravishankar Ramanathan</b> Assistant Professor, Department of Computer Science The University of Hong Kong Email: <a href="mailto:ravi@cs.hku.hk">ravi@cs.hku.hk</a> Phone: +852-2859-2350	
<b>3. Eli Barzilay</b> Adjunct Lecturer, Khoury College of Computer Sciences Northeastern University Senior Software Developer, Microsoft Email: <a href="mailto:eli@barzilay.org">eli@barzilay.org</a>	