Aarav Varshney

+91-7289988134 | aarav.varshney22@gmail.com | linkedin.com/in/aarav22 | github.com/aarav22 |
www.aaravvarshney.in

EDUCATION

Ashoka University
Sonepat, India

Postgraduate Diploma in Advanced Studies and Research — *Sept. 2022 – May 2023*

- Graduated Cum Laude with a thesis titled "Anonymous Proof of Account Ownership" under Prof. Mahavir Jhawar.
- Advanced Major in CS; Relevant coursework includes Information and Coding Theory, Reading, Reviewing, and Presenting Scientific Papers, Rapid Prototyping and Experimentation, and Machine Learning for Finance.

Ashoka University
Sonepat, India

Bachelor of Science in Computer Science, Minor in Mathematics — *Aug. 2019 – May 2022*

- Graduated Cum Laude with Major GPA of 3.73/4.0.
- Relevant coursework includes Computer Security and Privacy, Blockchain and Cryptocurrencies, Theory of Computation, Advanced Programming, and Abstract Algebra.

WORK EXPERIENCE

Teaching Fellow & Teaching Assistant
May. 2023 – Dec. 2023

Ashoka University — *Sonepat, India*

- Instructed and assisted in courses including CS-2361 (Blockchain and Cryptocurrencies), CS-1340 (Computer Networks), CS-2362 (Computer Security and Privacy), and CS-2375 (Database Management Systems).
- Facilitated student learning through conducting weekly office hours, leading tutorials, evaluated assignments while overseeing course-projects.

Software Engineer Intern
June 2022 – Aug. 2022

Amuse Labs — *Bengaluru, India*

- Implemented a POC or voice-controlled digital puzzles using the Alexa SDK, expanding distribution channels.
- Innovated a TypeScript library for adaptable Alexa-controlled puzzles, and established a robust nginx reverse-tunneling server for future development.

Backend Developer Intern
Mar. 2022 – June 2022

SALT (Funded by YC'W22) — *Bengaluru, India*

- Engineered an enhancement to Doc-to-PDF conversion techniques in Node.js, resulting in a 30-40% reduction in overall document generation time.
- Engineered microservices for a document templating engine to enable autofills,and automated deployment pipeline with GitHub workflows and AWS.

Founder & Head of Development
Sept. 2020 – Aug. 2022

Beyond Design Studio — *Chennai, India*

- Led team of 20-30 members, successfully delivering industry projects and generating net profits exceeding Rs. 3L+. Employed a diverse range of tools and frameworks, including Next.js, TailwindCSS, Node.js, Express.js, and GCP, across various projects.
- Cultivated partnerships with esteemed organizations, such as DaurCom, InIFarms, Quintessentially, and Niti Aayog, for collaborative development projects and ongoing tech maintenance initiatives.

RESEARCH EXPERIENCE

Research Assistant
Nov. 2022 – Present

Defense Research & Development Organisation (DRDO) — *Delhi, India*

- Leading the development of a Python-based software for post-quantum key management using PQC primitives (Dilithium and Kyber), with a focus on seamless integration into DRDO's existing systems.
- Implemented custom post-quantum X.509 certificates without relying on third-party libraries, ensuring verifiability through OQS's OpenSSL.

Research Assistant Intern
Aug. 2020 – Sep. 2020

Chegu Ruthwik — *Remote*

- Compiled a comprehensive report identifying the optimal customer segment and outlining essential strategies for developing a pilot model of a cost-effective oral hygiene product.
- Conducted in-depth analysis of market surveys to assess consumer preferences related to oral hygiene habits.

PUBLICATIONS

[PUB01] YouChoose: A Lightweight Anonymous Proof of Email Account Ownership

Aarav Varshney, Prashant Agrawal, and Mahabir Prasad Jhanwar   *under submission*
- We propose and implement a concrete YouChoose protocol for SMTP-TLS and discuss the implementation aspects for anonymously proving email account ownership using SMTP over the TLS secure channel.
- We also look into using a zk-SNARK based approach to extend anonymous PAO paradigm to shared email servers.

[REPORT01] Transitioning to a Post-Quantum Key Management Framework

Mahabir Prasad Jhanwar, Aarav Varshney and Adit Dhawan   *available on request*
- We propose and implement a post-quantum key management solution to safeguard the existing communication infrastructure against quantum adversaries. The report details the implementation of X.509 PQC certificates without relying on third-party libraries.

PROJECTS

Trading App | *Typescript, Socket.js, Node.js, Next.js, PostgreSQL, GCP*   April. 2022 – Aug. 2022
- Designed backend capable of handling 200+ users on a live stock-trading app, ensuring synchronized price and news updates every minute.
- Implemented timed events using a cron scheduler and employed sockets to push real-time updates to user devices. Successfully deployed on GCP's App Engine and Cloud SQL.

Jaan Pehchan | *Javascript, Node.js, ReactNative, Neo4j, Heroku*   Jan. 2022 – May 2022
- Engineered a full-stack solution for a social networking app catering to small businesses (MSMEs). The app achieved 500+ downloads on the Google Play Store.
- Visualized and established relationships with 60K+ nodes using the Neo4j database.

The New Geography | *Kotlin, Java, Android Studio*   July 2020 – Aug. 2020
- Developed an Android app to educate users about internet restrictions, specifically addressing censoring on Google Maps.
- Implemented a solution by reverse-engineering censoring on Google Maps through the translation of China's GCJ-02 geodetic datum to WGS-84.

OTHER ACTIVITIES

Head of Technology   Dec. 2019 – May 2022
Ashoka Business Review   *Ashoka University, India*
- Supervised and maintained tech development at Ashoka Business Review. Directed two expert interviews for a blockchain podcast series.

Teacher   Dec. 2021 – Jan. 2022
South Asian Winter Camp   *Remote*
- Designed and taught a comprehensive computer science curriculum to a class of 30+ high school students. The curriculum included programming, ethics, and discussions on career options. View Poster

ACHIEVEMENTS

- **Nomination for Microsoft Research Fellowship** - CS Dept., Ashoka University
- **Dean's List** - Dean of Academic Affairs, Ashoka University
- **Top 20% in DevCTF: Capture the Flag** - IIT Delhi

REFERENCES

Mahvir Jhawar
CS Dept., Ashoka University   *mahvir.jhawar@ashoka.edu.in*
- Capstone project/thesis advisor and supervisor for multiple projects.

Debayan Gupta
CS Dept., Ashoka University   *debayan.gupta@ashoka.edu.in*
- Course instructor and advisor for multiple Independent Study Modules (ISMs).

Deva Madala
Amuse Labs   *deva@amuselabs.com*
- Project supervisor at Amuse Labs.