

ABHINAV KUMAR

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PROFESSIONAL SUMMARY

UNSW Master of Information Technology student specialising in Cybersecurity, with hands-on experience across applied cryptography, secure software development, and authentication/payments integration. Independently designed and shipped three cryptography-focused security projects -- a threshold hash-based signature scheme, a quantum-hardware RSA cryptanalysis platform, and an end-to-end encrypted task manager -- alongside academic and industry experience in security engineering and network security.

TECHNICAL SKILLS

Security	Cryptography, Secure Software Development, Authentication, Network Security Fundamentals, Security Testing Basics
Programming	Python, C++, JavaScript, SQL, HTML, CSS, SCSS
Tools	React.js, Redux, Flutter, MERN Stack, Firebase, Stripe, Git, GitHub, MySQL, MongoDB
Coursework	Computer Networks, Operating Systems, DBMS, Software Engineering, Cybersecurity

EDUCATION

University of New South Wales (UNSW), Sydney | Master of Information Technology (Cybersecurity), 2024 - 2026
Manipal Institute of Technology, Manipal | B.Tech. in Information Technology, 2024 | Minor in Marketing | GPA: 8.6/10

EXPERIENCE

SDE Intern, EduHunt | Innovation Center, MAHE Manipal | Jan 2023 - Jul 2023

- Built and improved platform features across search, payments, and user-facing workflows, contributing to stronger reliability and secure transaction handling.
- Integrated a secure payment gateway, reduced transaction processing time by 25%, and improved tutor-student matching by 30% through search enhancements.

Management Head & Web Development Mentor, IOSD Manipal | Apr 2022 - May 2023

- Led management and web development activities for a 50+ member student technology community and mentored 100+ students in debugging, project delivery, and hackathon preparation.

PROJECTS

Shor's RSA Cracker — Quantum Cryptanalysis Platform | Applied Cryptography / Quantum Computing

- Live: crackrsa.com | Code: github.com/iabhi92/shors-rsa-cracker
- Implemented RSA key generation and classical factoring attacks from scratch, alongside a from-scratch quantum statevector simulator validated bit-for-bit against Google's Cirq framework.
- Executed a live period-finding run on real IBM quantum hardware, demonstrating Shor's algorithm end-to-end against RSA and benchmarking classical vs. quantum attack feasibility.

Threshold Hash-Based Signatures for Distributed Trust | Cryptography / Security Engineering

- Live: iabhi92.github.io/Crypto-Project | Code: github.com/iabhi92/Crypto-Project
- Implemented a k-of-n threshold signature scheme (Kelsey, Lang & Lucks, 2024) using Winternitz one-time signatures and Merkle authentication trees, with no reliance on RSA or elliptic-curve cryptography.
- Demonstrated real multi-party signing across isolated browser contexts over BroadcastChannel, with every cryptographic primitive computed client-side rather than simulated.

Haven — End-to-End Encrypted Task Manager | Applied Cryptography / Privacy Engineering

- Live: taskhavens.com | Code: github.com/iabhi92/haven-tasks
- Built a local-first task application with full end-to-end encryption (AES-256-GCM, PBKDF2-SHA256 at 600,000 iterations), requiring no account and operating fully offline.
- Designed a “You vs. The Server” transparency panel exposing the raw ciphertext the backend stores, and a layered privacy roadmap (verifiable builds, tamper-evident signed history, fragment-key share links) grounded in production E2EE trust-minimization principles.

Netcomz E-Commerce Platform | MERN Stack / Authentication / Payments

- Developed a full-stack e-commerce platform with search, admin CRUD operations, Firebase authentication, Stripe payments, and React Redux state management.

DeltaNode Community Platform | Frontend / Mobile

- Built frontend and mobile features using Flutter, including user authentication, search, and networking-oriented onboarding flows.

CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

- Google Cybersecurity Professional Certificate - in progress / planned
- ISC2 Certified in Cybersecurity (CC) - planned
- CompTIA Security+ - planned