Akshat Nathani

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Education

Thapar Institute of Engineering & Technology **Aug. 2023 – Present**
Bachelor of Engineering in Computer Engineering *Patiala, Punjab*

Experience

Thapar Institute of Engineering & Technology **May 2025 – July 2025**
Summer Intern *Patiala, Punjab*

- Designed and simulated UHF RFID tag antennas (866 MHz) using PTFE and Rogers substrates in CST, achieving effective impedance matching with Alien Higgs-4 RFID chips(Z = 20.5 - j191Ω).
- Performed large-scale parametric tuning by sweeping antenna geometry, generating 1000+ simulations, and built an optimized MLP-based model to automate impedance matching, reducing manual tuning by 40%.
- Built and evaluated end-to-end fall detection pipelines on the SisFall dataset, benchmarking classical ML models (XGBoost, MLP) against CNN-based architectures and achieving up to 99.39% accuracy.

Indian Army **July 2024 – May 2025**
Software Developer *Patiala, Punjab*

- Contributed to the development of RRCC software for real-time resource tracking in command center environments, enabling faster situational awareness and operational decision-making.
- Designed and implemented a publish–subscribe architecture for low-latency, real-time communication, enabling reliable message delivery across distributed system components.
- Built 15+ REST APIs in PHP, an interactive Leaflet-based map to locate personnel and assets in real time, and a dashboard for decision-making and report generation efficiently.

Projects

Mudra Website | *NextJS, Golang, PostgreSQL, Docker* | Link **April 2026**

- Developed a scalable anonymous voting platform for a live event, enabling real-time vote submissions while preserving voter anonymity.
- Handled 3.06k unique visitors and 68k production requests, including peak voting spikes exceeding 18k requests/day.
- Load-tested the voting endpoint at 1,000 concurrent clients, achieving 1,338 requests/sec with p95 latency of 935 ms and zero transport-level failures.

Ridezon | *NextJS, NodeJS, Prisma, Socket.io* | Link **November 2025**

- Built a ride-sharing platform using Next.js 15, Express, and PostgreSQL, implementing Prisma ORM for type-safe database operations.
- Integrated Google OAuth, JWT authentication, and Rate Limiting middleware to ensure secure user access and API protection.
- Developed an automated Expense Tracker supporting multiple splitting types (Equal, Exact, Percentage) and real-time Socket.io group interactions.

Linky (Open-Source) | *React, Golang, Redis, Docker* | Link **April 2024**

- Augmented an open-source URL shortener with custom redirect support, managing over 1,000+ active links serving 10,000+ monthly redirects and enabling real-time analytics with 99.8% uptime.
- Secured frontend routes using Redux and established role-based access control across 4 permission tiers, reducing unauthorized access attempts by 70% and improving security compliance.
- Designed and deployed Docker-based microservices architecture with Redis caching, reducing database queries by 80% and ensuring scalable, low-latency performance under 500+ concurrent requests.

Technical Skills

Languages: Python, C/C++, JavaScript/TypeScript, Golang, SQL, Bash
Backend: Node.js, Express, FastAPI, Flask, RESTful APIs, WebSockets, Microservices
Frontend: React, Next.js, Redux, TailwindCSS
Databases: PostgreSQL, MongoDB, MySQL, ChromeDB Redis (Caching)
Cloud & DevOps: AWS (EC2, S3, Lambda), Docker, Git, GitHub Actions, CI/CD, Linux, Nginx
Practices: System Design, API Design, Authentication & Authorization, Agile/Scrum