

Nishant Mohan

 portfolio |  Nishant040305 |  nishant040305 |  nishant040305@gmail.com |  +91-9651602279

EDUCATION

2023 – Present	Motilal Nehru National Institute of Technology Allahabad B.Tech. in Computer Science and Engineering	CPI: 8.67
2023	BBS International School, Prayagraj, Uttar Pradesh CBSE – Intermediate (Class XII)	Percentage: 92.4%

WORK EXPERIENCE

Software Engineer Intern – Microsoft	May 2026 – July 2026
- Enhanced the Microsoft Defender threat intelligence experience by implementing support for STIX Relationship and Sighting Objects in the Indicator Profile pane. - Built backend integrations enabling real-time threat intelligence across IPs, domains, URLs, and file entities. - Developed features for the Binary Analyzer workflow, supporting secure file analysis, report retrieval within Defender.	
Software Developer Intern – Indian Air Force (IAF)	Dec 2025 – Feb 2026
- Developed VayuReader, a secure document management platform for the Indian Air Force's Private Captive Mobile Network, enabling controlled distribution of sensitive operational documents. - Designed a secure backend with end-to-end encryption, replay protection, role-based access control, and configurable security for protected document access. - Developed VayuView (Astara), a mobile planetarium providing real-time celestial visualization for operational and training requirements.	

PROJECTS

AlphaZero-Style Dots-and-Boxes AI

Neural Networks Course Project

Self-play reinforcement learning system combining policy-value neural networks with MCTS.

- Tech:** C++17, LibTorch, CMake, Reinforcement Learning, MCTS
- Built an **AlphaZero-style training pipeline** with multi-threaded self-play, replay buffer, and batched inference.
- Designed **PatchNet**, reducing model parameters by **~60%** while enabling transfer learning across board sizes.
- Implemented **asynchronous MCTS** with DAG-based state reuse, achieving **>95%** win rate over alpha-beta baselines.

EchoScreen

Embedded Systems Course Project

Real-time audio streaming, waveform visualization, and speech-to-text transcription system.

- Tech:** Node.js, Socket.IO, Redis, ESP32, C++, Java, WebSockets, AssemblyAI
- Built an **ESP32 pipeline** streaming raw PCM audio from an I2S mic over WebSockets with device controls.
- Developed a **Node.js & Redis** server managing real-time room coordination and Socket.IO events.
- Implemented a **Java desktop server** rendering live audio waveforms and automating AssemblyAI transcription.

Distill News

AI-powered news platform with a scalable ingestion pipeline, semantic retrieval, and conversational search.

- Tech:** Next.js, FastAPI, Python, MongoDB, Redis, Docker, Azure Blob Storage, Foundry
- Built an LLM-powered multi-agent pipeline for article extraction, categorization and embedding generation.
- RAG using semantic embeddings and vector retrieval to enable grounded conversational search.
- Designed a hybrid recommendation engine leveraging content-based filtering, implicit user feedback, engagement signals, and freshness-aware ranking to deliver personalized news feeds.

High-Performance Stateful eBPF/XDP Firewall

Networking Course Project

Kernel-native stateful firewall built on eBPF/XDP with a userspace control plane.

- Tech:** C, eBPF, XDP, Linux Kernel, Incus
- Designed a **4-stage kernel pipeline** (Parser → State → Rules → Telemetry) at the XDP hook.
- Built **stateful TCP conntrack** with full handshake and flow lifecycle tracking in-kernel.
- Developed **firewallctl**, a CLI for zero-recompile rules, conntrack inspection, and JSON telemetry.

Astara

Offline-first, open-source mobile planetarium app for Android, built on Stellarium Web Engine.

- Tech:** C, Vue.js, Emscripten, Capacitor, Gradle
- Built **gyroscope sky tracking** using live device-orientation sensors with adaptive smoothing.
- Implemented an **AR camera overlay** rendering star maps onto the live camera feed.
- Bundled **~50K offline stars/DSOs**; pipeline: Emscripten → Webpack → Capacitor → APK.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, TypeScript

Frameworks: React, Next.js, FastAPI, LibTorch, Socket.IO

Systems & DBs: Linux, Docker, eBPF/XDP, PostgreSQL, Redis, AWS

Achievements

- LeetCode** — Knight (Rating: **2029**, Rank: **302**)
- Codeforces** — Specialist (Rating: **1568**, Rank: **590**)
- Top 12 — Hack36** — National hackathon *Apr 2025*
- Top 5 — CodeStart** — Flagship CP contest *Mar 2025*
- KVPY AIR 1056** — Top students nationwide *2022*
- Selected for INAO** — Top 1% in UP (Astronomy) *2022*