

SHREYAS SINGH

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EDUCATION

Manipal University Jaipur

B.Tech in Electronics & Communication Engineering

Jaipur, India

Aug. 2025 – May 2029

TECHNICAL SKILLS

Languages: C, C++, Python, JavaScript, TypeScript, HTML, CSS

Frameworks & Tools: Next.js, React, Three.js, FastAPI, Supabase (PostGIS), Git, Vercel, TinkerCAD

AI & ML: LLM Integration, Multi-Agent Systems, Reinforcement Learning (DQN/PyTorch), Reward Shaping, Experience Replay

Systems: Set-Associative Cache Architecture, Memory Access Pattern Analysis, System-Level Performance Benchmarking

Hardware: Arduino, Basic Circuit Design, Microcontroller Interfacing

PROJECTS

JanSamadhan – *Next.js 15, FastAPI, Gemini AI, Leaflet.js, PostGIS* – [Live](#) – [GitHub](#) – [Demo](#) Jan. 2026 – Mar. 2026

- Shipped a civic-tech platform serving 9 Delhi jurisdiction zones with 42+ complaint categories; ranked **Top 10 out of 25,000+ teams** at India Innovates, received Ministry review, and presented at **Bharat Mandapam** before senior Union Ministers and the CM of Delhi.
- Spearheaded full UI/UX across all visual aspects, Leaflet.js map with live location search, gamification engine (community upvote severity escalation: 50+ votes forces L4 Critical), and warehouse/worker dispatch flows.

Adaptive Cache Simulator with AI Replacement Policy – *Python, PyTorch, Plotly* – [GitHub](#) Mar. 2026 – May 2026

- Engineered a full L2 set-associative cache simulator (1024B, 8-way, 2-set) and trained a DQN agent to outperform classical eviction policies; achieved **AMAT 98.9 cycles vs. LRU's 101.5** and the **lowest writeback rate (31.80%)** among all non-optimal policies on Zipfian workloads.
- Resolved permutation invariance by sorting cache state on (frequency, negative-recency) before feeding the MLP, breaking the 42% hit-rate ceiling and pushing performance to **44.87% hit rate** – within 16 pp of Belady's optimal (60.71%).
- Eliminated safety guards after reward shaping (dirty-penalty = -1.0) confirmed the DQN natively learned valid eviction rules; benchmarked against FIFO, LRU, LFU, and Belady's across sequential, random, stride, and Zipfian workloads with a 6-chart Plotly dashboard.

NyayaAI – *Sarvam AI, FastAPI, Qdrant, Neo4j, Next.js 14* – [GitHub](#) – [Demo](#) Feb. 2026 – Apr. 2026

- Developed Agents 4 and 5 of a 5-agent legal pipeline: **Drafting Agent** (legal notices, FIR drafts, affidavits in Word/PDF) and **Explainability Agent** (confidence scores, HC/SC citation chains, full audit trail); integrated OCR and speech-to-text intake via **Sarvam AI**.
- Designed the majority of UI/UX across citizen and lawyer portals for a dual-side marketplace covering BNS, BNSS, IPC, CrPC, and CPC.

ARTERY – *Next.js 14, TypeScript, Gemini AI, Framer Motion, Tailwind CSS* – [GitHub](#) Nov. 2025 – Jan. 2026

- Architected a solo end-to-end art marketplace connecting Indian artisans and patrons, featuring text-to-image generation via **Gemini AI**, **Fabri** conversational curator, and a map-based artist discovery interface.

Personal Portfolio – *Next.js, Three.js, Framer Motion* – [Live](#) – [GitHub](#) Aug. 2025 – Oct. 2025

- Crafted first solo website with custom Three.js 3D animations and optimised frontend performance for smooth cross-device interaction.

EXPERIENCE & LEADERSHIP

MUJ ACM SIGAI

Technical Head

- Directed all technical initiatives for the AI chapter; contributed to drug discovery research applying diffusion models and reinforcement learning.

Bits&Bytes

Jaipur Fork Lead

- Established and grew the Jaipur chapter of India's teen-led code club, organising projects and hackathons to expand the local developer community.

Manipal University Jaipur

Apr. 2026 – Present

India

Apr. 2026 – Present

ACHIEVEMENTS

- Top 10 / 25,000+** teams nationwide at India Innovates Hackathon (2026).
- JanSamadhan selected by the **Ministry of Housing and Urban Affairs** for official review and real-world policy consideration.
- Invited to **Bharat Mandapam** to present JanSamadhan before the Chief Minister of Delhi, Union Ministers, and the CEO of Unstoppable.