

# MRINAL SHARMA

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## EDUCATION

### University of Notre Dame

M.S. in Computer Science & Engineering  
Served as a TA from 15th Aug, 2024 - Dec 31st, 2025

Notre Dame, IN

Jan 2026

### Vellore Institute of Technology

B.Tech in Computer Science & Engineering

Vellore, India

2020 - 2024

## PROJECTS

### NeighborDrive - AI-Powered Car Rental Platform

Next.js, AWS S3, CloudFront, Google Gemini

- Reduced image load latency by **60%** by architecting a scalable storage pipeline using **AWS S3** for asset hosting and **CloudFront CDN** for global caching.
- Engineered an automated damage detection system using **Google Gemini Multimodal**, processing vehicle inspection photos to identify vehicular damage with **90%+ accuracy**.
- Secured peer-to-peer payments and identity verification by integrating **Stripe Connect** and **NextAuth.js v5**, facilitating safe transactions for users while maintaining PCI compliance.

### InsightEngine - GenAI Business Intelligence Tool

Next.js, Vercel AI SDK, PostgreSQL, Recharts

- Developed a natural language interface for database querying using the **Vercel AI SDK** and **GeminiAI**, achieving a **95% success rate** in generating valid, complex SQL queries.
- Accelerated data reporting workflows by **40%** through a dynamic frontend that instantly converts raw SQL results into interactive charts using **Recharts** and **PapaParse**.
- Optimized large-scale data handling by implementing **Prisma** with connection pooling, ensuring stable performance during complex multi-table join operations.

### DevFlow - Real-time Collaborative Code Editor

Next.js, Node.js, WebSockets, Monaco Editor

- Achieved **sub-30ms** synchronization latency for concurrent users by engineering a custom **WebSocket (ws)** server utilizing Operational Transformation algorithms.
- Integrated the **Monaco Editor** (VS Code core) to support syntax highlighting and intellisense for 10+ languages, mirroring a desktop IDE experience in the browser.
- Deployed a scalable **Monorepo** architecture to isolate the high-throughput WebSocket server from the Next.js client, streamlining CI/CD pipelines and independent scaling.

### PulseCheck - Kubernetes Health Dashboard

Kubernetes, Prometheus, Grafana, Docker

- Visualized real-time cluster health by aggregating metrics from **Prometheus** and **cAdvisor**, providing actionable insights into node resource usage and pod status.
- Reduced mean-time-to-resolution (MTTR) for incidents by **40%** by implementing automated alerting rules for critical events like *CrashLoopBackOff* and *OOMKilled*.
- Optimized infrastructure costs by identifying underutilized resources and "zombie" containers, enabling a projected **25% reduction** in cloud resource waste.

## PROFESSIONAL EXPERIENCE

### Software Engineering Intern

Notre Dame, IN

RecruitMate (Next.js, Typescript, Prisma, Tailwind)

Aug 2024 - May 2025

- Improved Time to Interactive by **380ms** by removing unnecessary animation libraries, reducing JavaScript payload by **15KB**.
- Designed Prisma schema supporting 200+ universities across 12 athletic conferences in **sub-50ms** query response times. Reduced CSS code duplication by **60%** through Tailwind utility-first design patterns, eliminating **200+** lines of redundant styling.
- Optimized image rendering across **40+** components using Next.js Image, reducing bundle size by **28%**. Achieved **95+** Lighthouse performance score across all metrics.

## TECHNICAL SKILLS

**Languages** TypeScript, JavaScript, Java, Python, C++, SQL

**Frontend** Next.js, React, Tailwind CSS

**Backend** Node.js, Express.js, WebSockets (ws), Prisma ORM, PostgreSQL, MongoDB

**Cloud & AI** AWS, Kubernetes, Docker, Vercel AI SDK, Google Gemini

**Tools** Git, Postman, Monorepo Architecture, Prometheus, Grafana