

# MRINAL SHARMA

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## EDUCATION

<b>University of Notre Dame</b> M.S. in Computer Science & Engineering Served as a TA from 15th Aug, 2024 - Dec 31st, 2025	<i>Notre Dame, IN</i> <i>Jan 2026</i>
<b>Vellore Institute of Technology</b> B.Tech in Computer Science & Engineering	<i>Vellore, India</i> <i>2020 - 2024</i>

## PROJECTS

<b>NeighborDrive - AI-Powered Car Rental Platform</b> • Reduced image load latency by <b>60%</b> by architecting a scalable storage pipeline using <b>AWS S3</b> for asset hosting and <b>CloudFront CDN</b> for global caching. • Engineered an automated damage detection system using <b>Google Gemini Multimodal</b> , processing vehicle inspection photos to identify vehicular damage with <b>90%+ accuracy</b> . • Secured peer-to-peer payments and identity verification by integrating <b>Stripe Connect</b> and <b>NextAuth.js v5</b> , facilitating safe transactions for users while maintaining PCI compliance.	Next.js, AWS S3, CloudFront, Google Gemini
<b>InsightEngine - GenAI Business Intelligence Tool</b> • Developed a natural language interface for database querying using the <b>Vercel AI SDK</b> and <b>GeminiAI</b> , achieving a <b>95% success rate</b> in generating valid, complex SQL queries. • Accelerated data reporting workflows by <b>40%</b> through a dynamic frontend that instantly converts raw SQL results into interactive charts using <b>Recharts</b> and <b>PapaParse</b> . • Optimized large-scale data handling by implementing <b>Prisma</b> with connection pooling, ensuring stable performance during complex multi-table join operations.	Next.js, Vercel AI SDK, PostgreSQL, Recharts
<b>DevFlow - Real-time Collaborative Code Editor</b> • Achieved <b>sub-30ms</b> synchronization latency for concurrent users by engineering a custom <b>WebSocket (ws)</b> server utilizing Operational Transformation algorithms. • Integrated the <b>Monaco Editor</b> (VS Code core) to support syntax highlighting and intellisense for 10+ languages, mirroring a desktop IDE experience in the browser. • Deployed a scalable <b>Monorepo</b> architecture to isolate the high-throughput WebSocket server from the Next.js client, streamlining CI/CD pipelines and independent scaling.	Next.js, Node.js, WebSockets, Monaco Editor
<b>PulseCheck - Kubernetes Health Dashboard</b> • Visualized real-time cluster health by aggregating metrics from <b>Prometheus</b> and <b>cAdvisor</b> , providing actionable insights into node resource usage and pod status. • Reduced mean-time-to-resolution (MTTR) for incidents by <b>40%</b> by implementing automated alerting rules for critical events like <i>CrashLoopBackOff</i> and <i>OOMKilled</i> . • Optimized infrastructure costs by identifying underutilized resources and "zombie" containers, enabling a projected <b>25% reduction</b> in cloud resource waste.	Kubernetes, Prometheus, Grafana, Docker

## PROFESSIONAL EXPERIENCE

<b>Software Engineering Intern</b> <i>RecruitMate (Next.js, Typescript, Prisma, Tailwind)</i>	<i>Notre Dame, IN</i> <i>Aug 2024 - May 2025</i>
• Improved Time to Interactive by <b>380ms</b> by removing unnecessary animation libraries, reducing JavaScript payload by <b>15KB</b> . • Designed Prisma schema supporting 200+ universities across 12 athletic conferences in <b>sub-50ms</b> query response times. Reduced CSS code duplication by <b>60%</b> through Tailwind utility-first design patterns, eliminating <b>200+</b> lines of redundant styling. • Optimized image rendering across <b>40+</b> components using Next.js Image, reducing bundle size by <b>28%</b> . Achieved <b>95+</b> Lighthouse performance score across all metrics.	

## TECHNICAL SKILLS

<b>Languages</b>	TypeScript, JavaScript, Java, Python, C++, SQL
<b>Frontend</b>	Next.js, React, Tailwind CSS
<b>Backend</b>	Node.js, Express.js, WebSockets (ws), Prisma ORM, PostgreSQL, MongoDB
<b>Cloud &amp; AI</b>	AWS, Kubernetes, Docker, Vercel AI SDK, Google Gemini
<b>Tools</b>	Git, Postman, Monorepo Architecture, Prometheus, Grafana