

# Mridul Kumar

## Full-Stack Engineer

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Full-stack engineer with **5+ years** shipping products from **zero to scale**. Built and grew a platform to 97K monthly active users and 92M+ API requests/month as the first engineer, architecting everything from real-time notification systems (3M+ alerts/month) to distributed caching layers that cut response times by 83%. Recent work in AI-augmented search, designing multi-hop reasoning engines and hybrid retrieval systems with LangGraph. Core stack: TypeScript, React, Next.js, Node.js, PostgreSQL, GCP, Docker.

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### EXPERIENCE

#### **Polkassembly** - Open-source Governance Platform

Remote

*Founding Engineer* | *Senior Full-stack Developer* | [Github](https://github.com/polkassembly) | [polkassembly.io](https://polkassembly.io)

*Jan 2021–Present*

- Built the entire platform from scratch, API, database, frontend, scaling it to 97K monthly active users, 92M API requests/month, and 99.98% crash-free sessions.
- Implemented distributed Redis caching that cut API response times from 2.3s to 0.4s, enabling the platform to sustain traffic growth without proportional infrastructure cost increases.
- Led migration of the full stack (Next.js, Node.js APIs, PostgreSQL) from Vercel/DigitalOcean to GCP with Docker containerization, and set up monitoring with Prometheus and Grafana, improving security, observability, and resource efficiency.
- Architected a real-time notification system delivering 3M+ alerts/month across 5 channels (email, push, Slack, Discord, Telegram) with 99.9% delivery rate.
- Led cross-functional teams of up to 12 engineers, establishing code review processes, CI/CD standards, and a shared component library across multiple products.
- Designed an AI-powered content moderation system that reduced spam and low-quality submissions, improving platform signal-to-noise for 97K users.
- Drove product and technical strategy that helped secure ~\$2M in funding and grew the platform to 82% market share in its category.
- Negotiated \$200K in GCP credits with Google, extending the company's financial runway by months.

#### **PlusMinusEdu** - EdTech exam preparation platform

Remote

*Founding Engineer* | *Lead Full-Stack Developer* | [plusminusedu.com](https://plusminusedu.com)

*Jul 2020–Dec, 2020*

- Built the full platform from zero, database architecture, CI/CD pipelines, REST APIs, and a mobile-first frontend, growing to a student community of 76,000+ users.
- Developed a custom CMS with hierarchical question banks supporting LaTeX rendering and multi-language content, managing 50,000+ questions and tests.
- Integrated Stripe payment infrastructure with dynamic pricing and discount logic, enabling a tiered subscription model with real-time sales tracking.
- Built a multi-channel content delivery system supporting video lectures, interactive live quizzes, and real-time instruction across web and mobile.

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## VENTURES & OPEN SOURCE

### **React Web Speech** - Open-source npm package

Creator & Maintainer | [Github](#) | [npm](#)

- Identified a gap in the React ecosystem for production-ready speech-to-text and built a complete solution, composable hooks with mic permission management, cursor-aware text insertion, and cross-browser auto-recovery.
- Shipped as a tree-shakeable, TypeScript-first package (~5KB gzipped) with zero dependencies, SSR safety, and React 18 Strict Mode compatibility, optimized for drop-in use in Next.js and Vite projects.

### **Blockpedia** - AI-powered data explorer

Technical Founder | [blockpedia.ai](#)

- Architected a multi-hop reasoning engine using LangGraph that decomposes natural language queries into executable, dependency-aware plans across both static assets and REST, GraphQL APIs.
- Engineered a hybrid retrieval system combining BM25 keyword search and vector search with Reciprocal Rank Fusion for high-accuracy results.
- Implemented production-grade reliability, circuit breakers, step-wise validation, and intelligent query truncation to prevent cascading failures.
- Built a reactive Next.js frontend with Server-Sent Events to stream real-time agent reasoning, token usage, and source citations.

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## SKILLS

**Core:** TypeScript, JavaScript, Python, React, Next.js, Node.js, Rust, GraphQL, REST APIs, Tailwind

**AI:** LangChain, LangGraph, Vector Search, RAG Pipelines

**Infrastructure:** Google Cloud Platform, AWS, Docker, Redis, Prometheus, Grafana, CI/CD, Git

**Databases:** PostgreSQL, Prisma ORM, Drizzle ORM, Algolia, Firestore, MongoDB

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## EDUCATION

**Greater Noida Institute of Technology**  
Computer Science and Engineering

*Aug, 2018–Aug, 2022*