

# Mridul Balani

Freelance Engineer  
at Unreal Labs

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## EDUCATION

Degree	Institute	Year of Completion
Bachelors in Computer Science	Bharati Vidyapeeth Deemed University	2029
Intermediate	Amity International School, Mayur Vihar	2025
Matriculation	Amity International School, Mayur Vihar	2023

## PROFESSIONAL EXPERIENCE

- **Analytiqo** December 2025 - Present  
*Founding Engineer | Freelance* [Website](#)
  - Founding engineer running all engineering across client products on a product-to-product basis, covering architecture, development, infrastructure, and DevOps for golf club and league management platforms, eSIM commerce, and smart home platforms.
  - Own the entire delivery pipeline end-to-end: Dockerized web and API services, GitHub Actions CI/CD, database migrations, and production infrastructure, taking every product from first commit to production release.
  - Most recently shipped [The G'Life Golf Club](#) as sole engineer, spanning a website, member dashboard, admin tooling, and an [iOS app](#) on the App Store, notably extending native [Liquid Glass bindings](#) to render iOS 26's Liquid Glass UI from within a Capacitor web app.
- **Heurist.ai** January 2025 - June 2026  
*Software Engineer | Freelance* [Website](#)
  - Led full-stack development of [Ask Heurist](#), an AI search and chat product: built resumable streaming chat on the Vercel AI SDK, chat sharing with OpenGraph image generation, x402 crypto payments, usage quotas, and a unified auth system spanning web accounts, EVM/Solana wallets, and Coinbase Base app sign-in, while owning CI/CD and deployment infrastructure across the stack.
  - Led core development on the [Heurist Agent Framework](#), implementing Docker Swarm with GitHub Actions CI/CD for safer, streamlined deployments. Built and maintained key agents integrating with DeFi protocols (AAVE), wallet analysis (Zerion, Solana), and intelligence gathering from social platforms (Twitter, Truth Social).
  - Engineered the interface for [Model Context Protocol \(MCP\)](#), connecting Heurist technologies to LLM applications like Cursor, Windsurf, and Claude Desktop. Created a [CLI utility](#) to install SSE-powered MCP tools, significantly improving developer onboarding and adoption.
  - Built the developer platform around [Heurist Mesh](#): an API key portal with Stripe billing, usage analytics, an agent API playground, and a unified sign-in widget with email authentication and anti-spam controls.
  - Contributed to [Imagine](#), an image generation platform powered by Heurist models, adding smart generation and Hunyuan video models; also built the frontend for [Heurist Finance](#), an AI finance chat product, with full English and Chinese localization.
- **Lilypad Network** June 2025 - August 2025  
*Software Engineer | Freelance* [Website](#)
  - Built the backup inference system for [Anura](#), [Lilypad](#)'s AI inference API on a decentralized GPU network: a LiteLLM-based failover proxy with fallback mechanisms in the Go API for both chat and image completions, covering streaming response mapping, timeouts for stuck LLM jobs, and response normalization to stay consistent with the primary network.
  - Instrumented the fallback path with OpenTelemetry metrics and observability dashboards, deployed services to EC2 with CI/CD auto-deploy pipelines, and hardened the admin service with API key auth and Cloudflare tunnels.
  - Implemented reputation tracking for job lifecycle events across the network's solver, surfacing per-module reputation events through the stats API to enable reliability scoring of compute providers.

## PROJECTS

- **Kleis** February 2026  
*TypeScript* [GitHub](#)
  - Built an OAuth account proxy for coding agents, unifying GitHub Copilot, OpenAI Codex, and Anthropic Claude behind a single base URL with centralized credential storage, automatic token refresh, and scoped API keys for clients like [OpenCode](#).
  - Engineered provider-specific proxy adapters handling streaming response transformation, tool-name prefixing, and header/parameter normalization for each upstream API, since no two providers behave the same way.
  - Serves a models.dev-compatible model registry for zero-config model discovery, with per-key scoping, minute-bucketed request analytics off the hot path, and an admin panel for managing accounts, keys, and token refreshes.

- **flora** November 2024 - Present  
 Go, Rust & React [Website](#) | [GitHub](#)
  - Co-run **flora** in my free time, an open source collective building utilities for the web, spanning **sakura** and **faux**, avatar generation and placeholder image microservices written in Go, and an all-in-one analytics suite in Rust.
  - Built **orchid**, a fast, lightweight image and profile picture editor using Fabric.js, featuring AI-powered background removal and a marketplace for user-created cosmetics, backed by Flask with self-hosted S3 storage, OAuth, and rate limiting, deployed via Docker Compose.
- **Local Diffshub** May 2026  
 TypeScript [GitHub](#)
  - Built a local-first take on Pierre’s **Diffshub** for private repositories: a Git review app rendering branch, commit, staged, and unstaged diffs in a virtualized interface built to handle massive diffs, with syntax highlighting offloaded to a Shiki WASM web worker pool sized to available CPU cores.
  - Engineered a Bun and Hono backend restricted to strictly read-only Git commands, streaming live repository changes over Server-Sent Events from debounced file-system watchers, so reviews refresh in real time as files change on disk.
- **Infobahn CTF’25** November 2025  
 Cybersecurity [Deployment](#) | [GitHub](#)
  - Led infrastructure and deployment for **Infobahn CTF**, a global CTF with 10,000+ players across 800+ scoring teams, serving 1.3M+ requests during the event week; secured \$5,000+ in prizes with sponsorships from Google Cloud, OffSec, OtterSec, RET2 Systems, Cybersharing, and Rapid Risk Radar.
  - Managed the full competition stack (CTFd, kCTF on Kubernetes, and dedicated VMs) and built a custom challenge instancer providing on-demand, isolated per-player instances with dynamic flags, alongside automated flag-sharing and cheating detection that flagged cross-team flag submissions in real time.
- **CSCTF’24** August 2024  
 Cybersecurity [Deployment](#) | [GitHub](#)
  - Led a global Capture The Flag (CTF) competition with 5,000+ participants, securing infrastructure sponsorship from Google Cloud and prize sponsorships from Ottersec, Intigriti, OffSec, and more, totaling \$5,000+ in rewards.
  - Engineered a secure competition platform using **CTFd** and **kCTF**, implementing horizontal pod autoscaling and vertical node scaling on GKE with **NSJail** isolation and Cloudflare for DDoS protection.

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## COMPETITIONS & OPEN SOURCE

- **CTF Competitions:** Capture The Flag player since 2023, formerly with **CyberSpace** (Ranked #1 in the USA), now competing with **Infobahn** (Ranked #1 Globally, 2025), with podium finishes at international CTFs including UofTCTF, Srdnlen, LA CTF, and b01lers, alongside wins at national CTFs hosted by IITs, NITs, and IIITs.
- **Hackathons:** Regular hackathon winner; notably won 1st Place (\$1,500) at DoraHacks’ **Polkadot AssetHub Hackathon** with **Vulpix**, an NFT battle platform combining AI-generated artwork with on-chain turn-based combat through PolkaVM smart contracts.
- **Open Source:** Passionate about open source and regularly contribute upstream, with work landed in Vercel’s core codebase, Coinbase’s **x402** payments protocol, OpenCode, NousResearch’s Hermes, and various vercel-labs projects.

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## TECHNICAL SKILLS

- **Languages:** TypeScript, JavaScript, Python, Golang, Bash, SQL
- **Frameworks & Libraries:** React, NextJS, Vite, Hono, Capacitor, TailwindCSS, Zod, Vercel AI SDK, Flask, FastAPI
- **Infrastructure & DevOps:** Google Cloud, AWS, Kubernetes, Docker, GitHub Actions, Cloudflare, Vercel, Terraform, Nginx, OpenTelemetry
- **Databases & Tools:** PostgreSQL, Redis, SQLite, Drizzle ORM, Prisma, Stripe, Bun, CTFd, kCTF, NSJail

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## LEADERSHIP & COMMUNITY

- **CodeDay Delhi:** Directed **CodeDay Delhi** at **IIT Delhi**, a premier 2-day hackathon with 1000+ student participants. Led event planning, secured sponsorships, and delivered an advanced game hacking workshop teaching memory manipulation and reverse engineering techniques.
- **Inter-School Tech Fest:** As President of the School’s Computer Club, spearheaded the 3rd edition of ‘Confluence’, a major inter-school tech-fest featuring hackathon, CTF, and specialized workshops. Managed a team of organizers and attracted 1000+ participants from across NCR schools, coordinating logistics, sponsorships, and event execution.