

Mayank Goel

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EDUCATION

Virginia Tech — B.S. Computer Science, minors in Cybersecurity and Mathematics Expected Dec 2026
GPA 3.60/4.00 · Dean's List (Fall 2025, Spring 2025, Fall 2024, Spring 2024) · Coursework: Data Structures & Algorithms, Computer Organization, Computer Systems, Software Design

EXPERIENCE

Solo founder and engineer, Lobbyee — *realtime voice training simulator for hotel front-desk staff* May 2026 – Present · lobbyee.com

- Built a realtime voice pipeline on pipecat and WebRTC with a containerized Python worker, diagnosing and fixing a production connectivity failure caused by TURN relay selection
- Designed multi-tenant Postgres schema with row-level security, verified by adversarial cross-tenant testing against production
- Maintained a 946-test suite behind six CI workflows including two hard gates — full-history secret scanning, 173 tenant-isolation tests, and a weekly backup-restore round trip that performs the restore
- Built a gold-set evaluation harness for LLM grading quality, catching a token-truncation bug that silently corrupted scored reports

Undergraduate Research Assistant, Virginia Tech — DBWorkout Project Jan 2025 – Dec 2025

- Built authentication by integrating Google OAuth 2.0 and the Canvas API, enabling role-differentiated login for 50+ students and faculty
- Led a subgroup of 5 researchers building a leaderboard service on Node.js and PostgreSQL, validated with 20+ pilot users

Undergraduate Research Assistant, Virginia Tech — CodeWorld / No Blanket Jan 2025 – May 2025

- Developed a software engineering support tool in Angular and Python that let non-engineers complete setup tasks without developer help

Software Development Engineering Intern, Qilin Software Lab Pvt. Ltd. May 2024 – Aug 2024

- Contributed to 2 production web applications in React and JavaScript, implementing 3+ features and resolving 15+ technical issues within a team of 4
- Optimized front-end performance by refactoring components and tuning assets, raising Lighthouse scores from 72 to 90+ and cutting page load by 1–2 seconds

PROJECTS

Marquee — *WhatsApp-native AI product photography for Indian micro-sellers — send a product photo on WhatsApp, get a brand-ready ad back in minutes* marquee.mayank-goel.com · [GitHub](#)
TypeScript, Node.js, fastify, pnpm, monorepo, PostgreSQL, Prisma

- Profiled an image quality-gate pipeline and found decode and resize accounted for ~99% of runtime against under 1% for the pixel arithmetic; eliminated five redundant decodes of the same image, cutting per-image latency 57% (40.6ms to 17.4ms) with byte-identical output
- Built an AI image-generation pipeline with cross-provider failover (Gemini 3 Pro Image to OpenAI gpt-image-2), gating every result on deterministic quality checks so a degraded image escalates a tier or is refunded rather than delivered — and cut a planned Gemini Flash middle tier after testing showed it refused the same content as the primary, since both share a safety backend

Verity — *Compliance assessment whose citations are verified, and whose retrieval is measured* verity.mayank-goel.com · [GitHub](#)
Next.js, TypeScript, RAG, IR, BM25, vector search, embeddings

- Built a retrieval evaluation harness over a hand-labelled 118-query set with a held-out split; LLM listwise reranking reached recall@10 90.6% and nDCG@10 0.776 against 84.4% and 0.666 for dense alone
- Measured that equal-weight reciprocal rank fusion cut nDCG@10 from 0.666 to 0.383, swept the fusion weight on the development split, and published the negative result rather than the tuned one

HokieHub — *Peer-to-peer marketplace for Virginia Tech students, with bidding and a grounded AI price check* hokiehub.mayank-goel.com · [GitHub](#)
Java 21, Spring Boot, JPA, Hibernate, PostgreSQL, Flyway, REST API design

- Rebuilt a marketplace backend as a Java 21 / Spring Boot service: JPA domain model over five tables, validation at the request boundary, ownership rules in one service layer, RFC 7807 errors

TECHNICAL SKILLS

Languages	TypeScript · JavaScript · Python · SQL · HTML/CSS · Go · Java · C · C++
Frameworks	React · Next.js · React Native · Node.js · Expo · Tailwind CSS · Express.js · Angular · Django · .NET Core
AI / ML	OpenAI API · Google Gemini · RAG · Prompt engineering · Realtime voice · LLM evaluation · Whisper · Text-to-speech
Data & infra	PostgreSQL · Supabase · Prisma · SQLite · MongoDB · Firebase · pgvector · Redis · Flyway · TimescaleDB · Git
GitHub Actions	
Practices	Authentication · Row-level security · Multi-tenancy · REST APIs · Database migrations · Automated testing · Web performance