PRANSHUL ARORA

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prnz82.github.io/portfolio

Software Engineer (Backend & Systems)

SKILLS:

- **Languages:** JavaScript, Python, Java, C, C++, Go (Golang), Rust
- **Frameworks:** React, Node.js, Express, Flask, Django, FastAPI, Spring Boot, Hibernate
- **Databases:** NoSQL (MongoDB), MySQL, PostgreSQL, Firebase, Supabase
- **Cloud & DevOps:** AWS, GCS, Vercel, Render, Neon, Git, Docker, CI/CD, Jenkins, Kubernetes

PROFESSIONAL EXPERIENCE:

Centre for Railways Information Systems (CRIS) - Software Developer | Oracle SQL, Kafka, Kubernetes, Node.js

- Developed a high-throughput **ETL microservice** to ingest legacy Excel data in batches, using **Kafka** for **fault-tolerant**, **distributed** message brokering and schema cleaning
- Architected **HPA** (horizontal pod autoscaling) - based worker pipelines on **Kubernetes** to migrate **10M+ passenger records** (using Passenger ID as **idempotency key**)

Management Simulation Games (MSGames) - Full Stack Developer | Python, FastAPI, MongoDB, Jenkins, PyTest

- Independently designed and developed the entire backend and DB for two new simulations (**modular** architecture), currently being used at all major Tier-1 MBA colleges across India
- **Scaled** the backend to support **300+ concurrent players** in live simulation game sessions
- Resolved **production outages** multiple times affecting total **1,000+ users** live in classrooms

Diversifi - SDE | LangChain, LangGraph, Redis, GCP, FastAPI, Flutter, Dart, FAISS Vector DB

- Built a **RAG** pipeline with **Redis semantic caching**; deployed on **GCP** (Cloud Run)
- Developed a **LangGraph**-based **multi-agent** workflow with function calling, utilizing a Manager Agent; ensured **JWT**-based user data isolation and **service-to-service** authentication
- Implemented filtered reasoning and output streams to prevent chain-of-thought exposure

PROJECTS:

NodeFox (SaaS) - Founder | Node, React, Next.js, AWS, Firebase, Stripe, RabbitMQ, Github Actions ***Video Demo*** | ***Website***

- Built an **event-driven** workflow that triggers automated form creation and an **SMTP**-based **notification system** (**RabbitMQ** for rate limiting), with **cron jobs** for scheduled reminders
- Designed a cloud storage combining **AWS S3** (**PoLP**-scoped IAM to reduce **blast radius**, pre-signed URLs) and Google Drive integration via **OAuth**
- Implemented a **free-trial** system with **secure** payment method storage and **autopay**
- Built a role-based access control (**RBAC**) system with **Stripe webhook**–triggered **Firebase** workspace provisioning and an automated team invitation workflow
- Exposed public and authenticated APIs with per-IP **rate limiting**, **AWS Lambda reserved concurrency**, **API Gateway throttling** and **circuit breakers** to prevent cascading failures
- Configured **reCAPTCHA** score-based bot mitigation for public endpoints
- Configured **CloudWatch observability** with logging and metrics for system health monitoring

Smart Multi-Tenant Database System | Express, PostgreSQL, Neon DB

- Designed **resource-usage–optimizing** dynamic tenant allocation strategy across multiple DBs
- Designed a centralized lookup DB to automate pooled, **RLS-**protected tenant DB provisioning, **benchmarking** and **tuning** serverless DB concurrency via **k6 load testing**.
- Implemented **indexed** lookup and **caching** of URIs to reduce request **latency by ~40%**
- Implemented connection **pooling** to reduce **cold-start** overhead from **~90ms to ~4ms**

Real-time Collaborative Coding Environment | Node, Express, React, Socket.io, Render ***Live Demo*** | ***Github***

- Achieved **~50–100 ms real-time** sync latency over an **event-driven** Socket-based architecture
- Implemented **conflict resolution** using a **Last-Write-Wins** (LWW) strategy for simplicity

EDUCATION:

BITS Pilani | BE Computer Science