Vinayak Baghel

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EDUCATION

University of Illinois Chicago (UIC)   **Chicago, United States**
Master of Science, Computer Science | 3.55 GPA   Aug 2024 – May 2026

TECHNICAL SKILLS

- Programming Languages: Python, Java, Go, SQL, JavaScript, TypeScript
- Front-End: Next.js, React, Angular, Tailwind CSS, Angular Material, SASS, HTML5, CSS3, Redux, React Query
- Back-End: Node.js, Spring Boot, Express.js, REST APIs, GraphQL, gRPC, SQL Builder, Hibernate
- Databases: MySQL, PostgreSQL, MongoDB
- Tools & Testing: AWS, Git, JIRA, Confluence, CI/CD pipelines, Agile methodologies, Microservices, Docker, Azure DevOps

EXPERIENCE

Software Engineer, Totality Corp (Totality Media Pvt Ltd) – Gurugram, India   *May 2022 – Apr 2024*

- Designed and developed front-end applications using Next.js (React + TypeScript) with production-level state management using Redux Toolkit.
- Leveraged TanStack Query (React Query) to prefetch data, manage server state, automate caching, and refetch updated assets.
- Engineered backend gRPC APIs in Golang, integrating concurrency with goroutines to process parallel API requests.
- Integrated 3rd party APIs like Stripe API and Meta Business API with Golang webhooks, leveraging goroutines for concurrent processing of 200+ requests.
- Automated CI/CD deployment pipelines with GitHub Actions, reducing deployment time from 1 hour to 10 minutes using AWS EC2 and Docker, enabling teams to ship updates 3x faster.
- Maintained detailed engineering notes, sprint goals, and project guidelines and documentation in JIRA and Confluence.

Assistant Systems Engineer, Tata Consultancy Services – Pune, India   *Jan 2021 – Apr 2022*

- Developed Angular-based dynamic form widgets using Angular Material and SASS supporting drag-n-drop functionality.
- Developed backend modules in Spring Boot for user authentication (JWT) and CRUD operations.
- Integrating Spring Boot with Hibernate ORM to define entity relationships and handle PostgreSQL operations like joins, transactions, and pagination.
- Contributed to the migration of legacy RESTful service logic to GraphQL APIs within a large-scale enterprise application.
- Implemented unit testing across frontend and backend using Jest and JUnit, ensuring code reliability and smoother integration.
- Used Azure DevOps to manage sprint boards, trigger build pipelines, and conduct release planning.

PROJECTS

LLM Conversation Agent | *Next.js, Golang, gRPC, AWS (Lambda, SageMaker, Bedrock), Ollama, Docker*
Dec 2024

- Designed and deployed a real-time LLM conversation agent enabling bidirectional interactions between AI models.
- Built a Next.js chat interface allowing users to select debate topics and LLM pairs (e.g., Ollama's Mistral vs. Bedrock's Meta Llama 2).
- Deployed a Golang service on AWS EC2 (Docker) to manage debates and backend logic.
- Secured Bedrock access with IAM roles and AWS Lambda integration.
- Auto-scaled EC2 instances during peak loads, handling 20+ concurrent debates.

Reliable File Transfer Protocol (TCP-Like) | *Python, TCP/IP, Socket Programming, EWMA, Wireshark*   *Nov 2024*

- Designed a custom transport protocol to ensure reliable data transfer over a simulated unreliable link (packet loss/delay), replicating TCP's core features: -
    - Adaptive timeouts using Exponentially Weighted Moving Average (EWMA) for Round-Trip-Time (RTT) estimation.
    - Retransmission and selective acknowledgements (ACKs) to handle packet loss, achieving 95% throughput efficiency.
    - Graceful connection termination with FIN/FINACK/ACK sequences to prevent data loss.
- Validated robustness by simulating up to 50% packet loss and up to 500ms delays, ensuring 100% file integrity.