Vishal Kumar

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EDUCATION

MSci Computer Science (2021–2025)
King's College London, United Kingdom
- ✓ *Grade*: First Class Honours

SKILLS

Java, Python, Golang, C++, TypeScript, Java, SQL, Git, Linux, Rust, Scala, AWS, Docker, Kubernetes, Terraform

PAST EXPERIENCES

Amazon - Data Engineer Intern [AI Automation Team] (June 2025 - Present)
- ✓ Designed and implemented a production-grade, agentic AI Text2SQL pipeline, reducing financial reporting latency by automating queries across 100M+ rows, cutting analyst workflow time by 60%. **[Python, Bedrock Agentcore, AWS Strands Agents, MCP, RAG, Pytest]**.
- ✓ Produced High Level (HLD) and Low Level designs (LLD) evaluating architectural trade-offs; validated Text2SQL adoption by demonstrating improved scalability and a stronger security model: queries executed directly within AWS without exporting or storing highly sensitive financial data.
- ✓ Developed a PDF ingestion service to automate ticket-raising, streaming large files via in-memory buffers to S3 and reducing document size from 150 pages to 3 pages for efficient downstream processing **[Python, PyPDF2, S3]**

Amadeus IT Group - Software Development Engineer Intern (April 2024 - October 2024)
- ✓ Engineered an ETL pipeline to process Splunk data from 150+ airlines, implementing efficient data manipulation algorithms that reduced Azure pipeline cost calculation time by 90%, while ensuring correctness and reproducibility. **[Python, Pandas, Pytest, Splunk, Grafana, Seaborn, BitBucket Pipelines]**
- ✓ Built a proof-of-concept passenger-facing web app with real-time messaging via WebSockets and airline system integration, demonstrating millisecond-scale updates and distributed fault tolerance. **[AngularJS, Java, WebSockets, Azure Functions, Kafka, GitHub Actions]**
- ✓ Evaluated architectural approaches to integrate modern passenger-facing systems with legacy agent transaction screens, identifying compatibility constraints and proposing migration paths for high-availability, low-latency workflows.
- ✓ Designed an event-driven architecture bridging on-prem authentication with Azure IAM and integrating with legacy transaction screens, ensuring high availability, low-latency transaction handling, and maintaining PCI-DSS compliance with 99.9% SLA uptime.

Denr - Co-Founder and Software Engineer (September 2023 - July 2024)
- ✓ Spearheaded a team of 7 to prototype a fintech application, building a Golang REST API with WebSockets and Kafka–based notification service, and a React Native client; engineered scalable backend infrastructure to support concurrent borrower–lender interactions with guaranteed message delivery. **[Golang, WebSockets, Testify, Chi, PostgreSQL, Apache Kafka, TypeScript, React Native, Tailwind CSS, Git]**
- ✓ Drove platform growth by developing a Next.js web app for user acquisition and integrating feedback-driven enhancements; achieved a 77% user satisfaction rate in pilot testing.
- ✓ Promoted to CTO, overseeing global team across India and the U.S.; directed system architecture decisions, sprint planning, and milestone delivery.

PROJECTS

IBM Skills Build Enhancement - Client: IBM
- ✓ Selected among 5 students in university batch to collaborate with IBM on a POC to improve IBM Skills Build.
- ✓ Developed a gamification prototype using the PERN stack to boost user acquisition and retention. **[PostgreSQL, Supabase, Node.js, React, Express]**
- ✓ Fine-tuned LLMs (T5, DistilBERT, ALBERT) with LoRA and HyperOpt, improving classification accuracy by 54% for a reverse Turing Test concept. **[PyTorch, Python]**
- ✓ Awarded 92% in the final presentation by university and IBM evaluators.

Limit Order Book System (Documentation | GitHub)
- ✓ Implemented a price–time priority limit order book supporting limit and market orders, partial fills and FIFO queues per price level. **[C++, GoogleTest]**
- ✓ Implemented a lock-free SPSC ring buffer to decouple order ingestion from the matching engine.
- ✓ Developed comprehensive unit tests using GoogleTest to verify matching behavior, FIFO ordering, and edge cases, ensuring correctness and robustness.

Stock Ticker ETL Pipeline (Documentation | GitHub)
- ✓ Built an end-to-end ETL pipeline ingesting live tick data into a multi-tier S3 data lake (raw and cleaned zones, partitioned by event date), explicitly designed to reduce performance bottlenecks and enable scalable historical storage with efficient downstream queries. **[Python, AWS S3, AWS Glue, PySpark, Redshift, CDK, IAM, Pytest]**
- ✓ Designed two-stage transformation flow: standardized raw ticks via PySpark/AWS Glue, then computed Lee–Ready trade classification, VWAP, and trade imbalance for downstream analysis in Redshift.
- ✓ Automated schema discovery and reproducibility with Glue Crawlers and AWS CDK, applying IAM-based access control; validated pipeline integrity with unit + integration tests.

Internal Admin Dashboard (Documentation | GitHub)
- ✓ Constructed an internal admin dashboard designed to monitor user loan activity.
- ✓ Deployed containers on Amazon EKS using Kubernetes and AWS Fargate to handle infrastructure management, leveraging Terraform for IaC to automate the setup of EKS clusters.**[Java, Springboot, Docker, Docker Compose, AngularJs, TypeScript, Amazon EKS, AWS Fargate, AWS IAM, Kubernetes, Terraform]**