

Vignesh Mohanavelu

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EDUCATION

Arizona State University, MS in Computer Science

Aug. 2024 – Present | AZ, USA

Relevant Courses: Advanced Algorithms, NLP, Cloud Computing, Advanced OS

GPA: 4.0/4

National Institute of Technology, B.Tech in EE

Jul. 2018 – May 2022 | Trichy, India

Relevant Courses: Data Structures, Operating Systems, DBMS

(First Class)

PROFESSIONAL EXPERIENCE

Software Engineer - Full Stack

Jul 2022 – Jul 2024

Chennai, India

Standard Chartered Global Business Services

- Co-owned the development of an enterprise trade platform using **React**, **Node.js**, **Spring Boot**, **Oracle DB**, and **JPA**, handling **2M+** daily transactions. Integrated **OAuth2** and **Apigee** for load balancing and rate limiting.
- Microservice Architecture:** Orchestrated migration from a legacy monolithic system to event-driven microservices using Apache **Kafka**, reducing API response time by 45% and achieving sub-100ms message latency.
- Distributed Caching:** Designed a distributed caching service that serves as the primary market data for all trades across the system. Increased system throughput by 25% and reduced average query time by 35%.
- Security & Code Quality:** Identified and remediated 150+ vulnerabilities (XSS, SQL injection) through automated security scanning with SonarQube, improving code quality by 60% within an **Agile** development cycle.

Research Software Developer

Mar 2025 – Present

Biodesign Institute, Arizona State University

Tempe, AZ

- Architected an admin management platform using **Next.js**, **Express.js** and **PostgreSQL** to consolidate SharePoint workflows, reducing manual processing by 1.5x and approval turnaround by 60%.
- Integrated **JWT**-based authentication with **RBAC**, improving access-control compliance.
- Modernized a cron-based IoT pipeline to a real-time **MQTT** ingestion system, collecting data from 350+ lab freezers and reducing costs by **90%**.

Software Analyst Intern

May 2021 – Jul 2021

Hexaware Technologies

Bangalore, India

- Designed and implemented scalable REST APIs using **Vue.js** and **FastAPI** to streamline supply-chain integrations, improving data synchronization and end-to-end throughput by **20%**.
- Introduced and maintained **Swagger/OpenAPI** documentation to lower API integration errors by 15%.

TECHNICAL SKILLS

Languages : C/C++, Java, HTML/CSS, JavaScript/TypeScript, Python, C#, Go, SQL

Web Frameworks : React, Angular, Vue, Node.js, Express, Spring, FastAPI, GraphQL, Kubernetes

Databases & Messaging : PostgreSQL, MySQL, Oracle SQL, MongoDB, NoSQL, Redis, Kafka, Solace

Cloud & DevOps : AWS (Lambda, EC2, S3), Azure, Docker, Jenkins, Git, CI/CD, Postman, Swagger

AI/ML : Numpy, Pandas, Scikit-learn, TensorFlow, Pytorch, Langchain

PROJECTS

Multi-Agent Legal Discrepancy Detection | LangGraph, LLM, RAG, Qdrant

Jan 2025

- Co-Architected a modular multi-agent system using **LangGraph** to detect discrepancies in legal contracts via Retrieval-Augmented Generation (**RAG**) with a **Qdrant** backed vector database.
- Designed agents for orchestration, compliance checks, and clause rewriting, leveraging long-context LLMs (**GPT-4o**, **Gemini**) to reason over cross-clause dependencies.

Distributed Data Processing Pipeline | Neo4j, NoSQL, Kafka, Docker, Kubernetes, Helm

Nov 2025

- Designed and implemented a scalable, fault-tolerant data processing pipeline **Kafka** and **Neo4j** to process NYC taxi trip data (timestamps, distances, fares) for graph-based analytics with PageRank and BFS algorithms.
- Deployed a multi-container architecture using **Docker** and **Kubernetes**, integrating Kafka Connect for scalable data ingestion.

DineAZ Chatbot | AWS Lambda, S3, Lex, DynamoDB, ElasticSearch, SQS, SES

Nov 2024

- Built a serverless dining recommendation chatbot using **AWS Lex** and **Lambda**, integrating **DynamoDB**, **ElasticSearch**, and **SQS** for event-driven restaurant queries with automated **SES** email notifications. Hosted on **S3**.