

# AKSHAY KUMARAN VENKATESAN

Boston, MA | (857) 310-6296 | [akskum7050@gmail.com](mailto:akskum7050@gmail.com)

## SUMMARY

Aspiring backend engineer with strong experience in developing and testing microservices, including production-ready Docker deployments with PostgreSQL and comprehensive testing suites achieving 90%+ code coverage. Proficient in Java and familiar with asynchronous processing, REST APIs, and relational databases. Eager to contribute to a collaborative, fast-paced environment while continuously learning and adapting to new technologies.

## EDUCATION

### Boston University

Sep 2024 - Jun 2026

Master of Science, Applied Data Analytics

- **GPA:** 3.69

### Vellore Institute of Technology

Sep 2020 - May 2024

Bachelor's of Technology, Computer Science and Engineering

## EXPERIENCE

### NCR Corporation

May 2023 - Jul 2023

Business Analyst Summer Intern

- Developed a product waterfall model using Python to support data-driven decision-making, which improved the accuracy of forecasting and aligned with modern data analysis techniques.
- Collected, tracked, and analyzed data to evaluate business and market trends, integrating statistical analysis and agile practices, which led to more informed strategic planning.
- Utilized analytical software to compile and model data, applying data science principles and leveraging tools familiar to modern machine learning workflows.

### Springer Capital

Jun 2025 - Present

Software Engineer Intern

- Engineered and tested data extraction microservices using the Flask framework, integrating asynchronous processing for reliable operations and achieving over 90% code coverage with pytest.
- Designed a layered microservice architecture with custom exception handling and integrated third-party APIs, enhancing secure data extraction and real-time job lifecycle management.
- Deployed production-ready Docker containers orchestrated with CI/CD pipelines; configured PostgreSQL databases and developed comprehensive RESTful APIs, ensuring robust and maintainable backend service delivery.

## ACADEMIC PROJECTS

### Retail-Sync: Secure Multi-Tenant Retail Database.

- Designed and implemented a BCNF-normalized PostgreSQL database with Row-Level Security (RLS) and Role-Based Access Control (RBAC) for multi-tenant retail operations.
- Built a full-stack retail management application using React 18, TypeScript, Flask, and PostgreSQL, featuring real-time inventory tracking and role-based user interfaces.
- Configured Apache Kafka and Debezium to stream real-time changes from PostgreSQL to MongoDB, enabling live analytics and reducing data latency from hours to seconds.
- Deployed the application to AWS using Lambda, API Gateway, S3, CloudFront, and RDS, achieving 99.9% uptime with serverless architecture and global CDN distribution.
- Tools: React, TypeScript, Flask, Python, PostgreSQL, MongoDB, Apache Kafka, Debezium, AWS Lambda, API Gateway, S3, CloudFront, RDS, Docker, Git.

### Personalized Activity-Based Treatment Recommender

- Architected an end-to-end pipeline to stream, process, and store real-time sensor data from an Apple Watch using FastAPI and the InfluxDB time-series database.
- Developed a custom signal processing workflow to extract features from raw sensor data, training and validating an XGBoost model on the personalized dataset for live activity classification.
- Implemented a Retrieval-Augmented Generation (RAG) system using a Large Language Model to generate dynamic, context-aware wellness recommendations based on the model's real-time predictions.
- Tools: Python, FastAPI, InfluxDB, XGBoost, Pandas, LlamaIndex, React, Tailwind CSS, Docker.

### Smart Taxi System using AI

- Created an AI-powered smart taxi system utilizing a 4D NumPy array to optimize travel time based on city, time, and day.
- Implemented data processing, machine learning models (TensorFlow, Keras), and visualizations (Matplotlib) for route prediction and efficiency analysis.
- Tools: Python, NumPy, Pandas, TensorFlow, Keras, Matplotlib

## SKILLS

- **Tools:** Tableau, Canva, Microsoft Excel, Microsoft Word
- **Programming Languages:** Java, C++, Python, R, HTML, CSS, JavaScript, SQL, Kafka, MongoDB, Flask, Scala, TailwindCSS, React.js
- **Data Science & Machine Learning:** Data Science, Machine Learning, Statistical Analysis, AI, Data Engineering, TensorFlow, PyTorch, XGBoost, SKLearn, Spark, MLlib, Large Language Models, RAG Models
- **Methodologies:** Agile Practices, DevOps Practices
- **Backend Technologies:** Postgres, RESTful APIs, Asynchronous Processing, FastAPI, Timeseries Database, Influx, Llama Index