ABHINAY PRABHURAJ

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Education

Georgia Institute of Technology   Graduation date: May 2026
B.S in Computer Science (Threads: Artificial Intelligence, Info-Internetworks)   *GPA: 3.87/4*

Experience

Travelers Insurance SWE Intern   May 2024 – August 2024
Software Engineering Intern   *Hartford, CT*
- Developed an ETL Script using AWS Lambda and Terraform to automate the extraction and processing of financial data from CSV files in S3 buckets, significantly reducing manual data handling and improving data accuracy.
- Implemented data manipulation pipelines in Databricks, resulting in a streamlined workflow that supported real-time analytics, and facilitated storage in Snowflake, enhancing data-driven decision-making capabilities for business users.
- Developed a robust process using PyTorch, Sentence-BERT, and NumPy to transform database tables into high-dimensional vector representations.
- Captured semantic relationships and contextual nuances within the table data, ensuring efficient indexing and comparison, resulting in a **22%** improvement in data retrieval accuracy and a **26%** reduction in query response time.

Quantum Machine Learning Researcher   January 2024 – Present
Researcher   *Atlanta, GA*
- Integrated advanced tensor network frameworks using TensorFlow into the quantum machine learning pipeline for efficient representation and compression of high-dimensional data.
- Implemented a quantum embedding scheme leveraging NumPy and Qiskit to encode complex data structures into quantum states, leading to a **25%** increase in model accuracy by exploiting entanglement properties for improved representation of intricate relationships within the dataset
- Developed an optimization algorithm based on entanglement entropy minimization to prune tensor connections, reducing the dimensionality of quantum-encoded data by **40%** while preserving **87%** of the critical information.

Projects

Automated Stock Pairs Trading Platform | *Python, MongoDB, Pandas, Kubernetes, Js*   January - June 2024
- Developed a sophisticated stock pairs trading bot utilizing machine learning algorithms, Pandas, YFinance, and real-time WebSocket APIs to trade correlated stock pairs across various sectors, optimizing for maximum returns.
- Integrated MongoDB to manage a robust database, storing comprehensive historical market data and trading metrics, with advanced queries for efficient data retrieval, updates, and analysis.
- Transformed the trading bot into a dynamic web application using Flask and React, providing a seamless user experience for monitoring trading activity.
- Containerized the application using Docker and orchestrated deployment with Kubernetes, along with background task processing with Redis and Celery.

Amazon Clone E-Commerce Platform | *Node.js, Spring Boot, Express.js, PostgreSQL, OAuth2, Jenkins*   May - July 2024
- Designed a scalable e-commerce platform using microservices architecture with Node.js and Spring Boot, ensuring modularity and maintainability for a local business.
- Implemented backend services with Express.js for order management, inventory, and payments, using PostgreSQL for data storage and Redis for caching, improving response times by 40%
- Secured the platform with OAuth2 for authentication and JWT for session management; automated CI/CD pipelines with Jenkins and managed cloud infrastructure with Terraform.

Financial Fraud Detection System | *Python, Apache Kafka, Redis, PostgreSQL, Prometheus, Grafana*   July - Present
- Architected a real-time data ingestion pipeline using Apache Kafka with distributed, fault-tolerant clusters to handle millions of financial transactions per day, ensuring low-latency processing and scalability across multiple financial platforms
- Engineered a fraud detection model utilizing TensorFlow and Python that performs anomaly detection on live transaction streams, leveraging historical patterns and real-time features to achieve a 35% improvement in fraud detection accuracy
- Monitored system performance and set up real-time alerts using Prometheus and Grafana, providing insights into system health, transaction throughput, and fraud detection model accuracy

Technical Skills

Languages: Python, Java, JavaScript, TypeScript, SQL, HTML, CSS
Developer Tools: Docker, Kubernetes, VS Code, Git, Jenkins, Terraform, CI/CD pipelines
Libraries & Frameworks: Pandas, NumPy, Apache Spark, TensorFlow, React, FastAPI, RestAPI, PyTorch
Services: AWS (Lambda, EC2, S3), Azure, Google Cloud (GKE, BigQuery), Snowflake, Databricks, Firebase, Redis
Relevant Coursework: OOP, DSA, Cloud Computing, ML, Big Data, System Design, Distributed Systems