Santhosh Sumathi Elumalai

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Education

M.S. in Computer Science Aug 2023 - May 2025

George Mason University, Fairfax, VA GPA: 3.78

Relevant Coursework: Software Engineering, Component-Based Software Development (DevOps), Artificial Intelligence, Natural Language Processing, Decision Guidance Systems, Analysis of Algorithms

B.E. in Computer Science and Engineering Aug 2017 – Apr 2021

Anna University, Tamil Nadu, India

Relevant Coursework: Algorithms, Data Structures, Distributed Systems, Web and Mobile Development, Operating Systems

Technical Skills

Programming Languages: Java, Python, C, C++, C#, JavaScript, SQL

Web Development: HTML, CSS, Spring Boot, Node.js, React

Machine Learning and Data Analysis: TensorFlow, Keras, PyTorch, Scikit-Learn, NumPy, Pandas, SciPy, Large Language Models(LLMs)

Cloud Computing and DevOps: Amazon Web Services (AWS), Jenkins, Kubernetes, Terraform, Docker, Ansible

Tools, Software and OS: Android Studio, Git, Postman, VS Code, IntelliJ, Eclipse, Linux, Windows

Databases: MySQL, Oracle, PostgreSQL, MongoDB

Professional Experience

Infosys | Tamil Nadu, India May 2022 - Mar 2023

Software Engineer

- Maintained Spring Boot microservices for a core banking product used by financial institutions in 100+ countries. Assisted in debugging, integration, and testing, enhancing system stability and efficiency.
- Optimized API performance by 20% through automated testing and validation using Postman and JavaScript scripts, improving communication reliability between microservices.
- Supported Kong Gateway configuration for rate limiting and access control, reducing unwanted traffic by 25% during peak usage, improving API performance and security.
- Managed service health checks using Spring Boot Actuator, enhancing monitoring of key metrics like response times and error rates for early issue detection.
- Mentored freshers on REST APIs, Spring Boot, and API testing through KT sessions, ensuring smooth knowledge transition and team productivity.

M2P Fintech | Tamil Nadu, India May 2021 - July 2021

Software Engineer

- Developed and maintained login and payments APIs using Java, incorporating Single Sign-On (SSO) functionalities to enhance user authentication and streamline access to payment systems.
- Optimized MySQL database queries to improve data retrieval efficiency within payment systems handling transactions worth $43.75 billion per month.
- Configured and deployed Java-based applications on Linux systems, ensuring compatibility and stability for solutions utilized by 1,200+ firms, including banks and fintech companies.

Academic Projects

PatriotPilot: NLP-Based University Chatbot Sep 2024 - Dec 2024

- Developed and integrated a chatbot for George Mason University's online resources using a Retrieval-Augmented Generation (RAG) framework, deployed as a pop-up on a prototype GMU CS website for seamless user interaction.
- Scraped, structured, and preprocessed data from university websites into JSON pairs, optimizing preprocessing to reduce noise and retain semantic relevancy.
- Embedded text using E5-Large-v2, stored embeddings in a FAISS index, and fine-tuned Qwen 2.5 14B Instruct LLM with instruction-response pairs.
- Achieved recall and precision scores >70%, ensuring accurate retrieval and response generation.

Survey Management System – Full Stack Web Application Sep 2024 - Dec 2024

- Built a scalable web app using Spring Boot (backend) and Vue.js/Angular (frontend) for interactive interfaces.
- Built RESTful APIs and integrated JPA/Hibernate with MySQL for efficient storage, ensuring seamless CRUD operations.
- Unified deployment by integrating the frontend and backend into a single Spring Boot JAR, containerized with Docker, and hosted locally for verification.
- Implemented a CI/CD pipeline using Jenkins for automated testing and enhanced scalability with Kafka for data streaming and Terraform for infrastructure management.

Job Recommendation System Feb 2024 - May 2024

- Built a recommendation system using DistilBERT for similarity checking, achieving a similarity score >0.90%.
- Hosted as a web app using Flask and Nominatim API for location-based tuning, ensuring accurate matches.