# **Santhosh Sumathi Elumalai**

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**Education**

**M.S. in Computer Science** Aug 2023 - May 2025(Expected)

*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++, JavaScript, SQL

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

**Machine Learning and Data Analysis:** TensorFlow, Keras, PyTorch, OpenCV, Scikit-Learn, NumPy, Pandas, SciPy

**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

*System Engineer*

* Worked in the Finacle team, supporting a core banking product used by financial institutions in over 100 countries globally, collaborating with developers to maintain Spring Boot-based microservices. Assisted in debugging, integration, and testing of microservices, contributing to system stability and efficiency.
* Actively participated in API testing and validation processes, configuring and validating API requests using Postman and basic JavaScript scripts to automate checks, reducing manual testing efforts by approximately 20%. Worked on optimizing API performance, ensuring reliable communication between microservices, and supporting troubleshooting efforts.
* Aided the maintenance of rate limiting and access control configurations in Kong Gateway to manage API performance and security during peak usage times. Supported the testing and validation of these controls, which helped reduce unwanted traffic by approximately 25% during peak periods, contributing to stable and secure API performance.
* Assisted in managing service health checks and diagnostics using Spring Boot Actuator, supporting the team in monitoring microservice performance. Helped track key metrics such as response times, error rates, and resource usage, contributing to early detection of issues and maintaining system reliability.
* Mentored freshers through Knowledge Transfer (KT) sessions on REST APIs, Spring Boot, and API testing, ensuring a smooth handover of critical knowledge during my transition. This accelerated their onboarding and maintained team productivity.

**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

* Developed a scalable survey management application using Spring Boot for the backend and frontend frameworks (Vue.js and Angular) to create interactive and responsive user 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

* Created a job recommendation system using DistilBERT, a transformer NLP model for similarity checking along with other metrics to provide personalized recommendations.
* Hosted as a web app using Python Flask and used Nominatim geocoding API for tuning location preferences.
* Achieved a similarity score >0.90%, ensuring accurate matches to job listings based on user profiles and preferences.