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Santhosh Sumathi Elumalai

Software Engineer

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Software Engineer with 1+ year of professional experience and a recently completed M.S. in Computer Science from George Mason University. Skilled in designing and building scalable backend systems and full-stack applications using Java, Python, Spring Boot, Node.js, and React. Possesses strong working knowledge of Generative AI and Large Language Models (LLMs), including integration and fine-tuning for real-world use cases. Experienced in developing APIs and deploying cloud-native solutions using AWS, Docker, and CI/CD pipelines.

Skills

Programming Languages	Java, Python, C, C++, C#, JavaScript, SQL
Web Development	HTML, CSS, Spring Boot, Node.js, React, Express.js, Angular
Machine Learning	TensorFlow, Keras, PyTorch, Scikit-learn, Hugging Face, OpenCV, Large Language Models (LLMs)
Analytics & Visualization	NumPy, Pandas, SciPy, Matplotlib, Seaborn, Jupyter Notebooks, Tableau, Power BI
Cloud Platforms	AWS (EC2, S3, Lambda, RDS), GCP (BigQuery, Cloud Storage), Azure (Functions, Storage, DevOps)
DevOps & Automation	Jenkins, Docker, Kubernetes, Helm, Terraform, Ansible
Databases	MySQL, Oracle, PostgreSQL, MongoDB
Development Tools	Git, Postman, VS Code, IntelliJ IDEA, Eclipse, Android Studio, Docker, Bash, Jira

Technical Experience

Infosys Limited - Software Engineer | **Chennai, India** **May 2022 - Mar 2023**

- Maintained Spring Boot microservices powering a core banking platform used in 100+ countries. Assisted in debugging, integration, and testing, enhancing system stability and efficiency.
- Boosted API performance by 20% through automated testing and validation using Postman and JavaScript scripting.
- Applied rate limiting and access control via Kong Gateway, reducing traffic by 25% during peak load and improving API performance.
- Monitored 5+ key metrics (e.g., response time, error rates) via Spring Boot Actuator; enabled diagnostics and reduced issue resolution time.
- Delivered 3 knowledge transfer sessions mentoring 5+ new hires on REST API standards, test automation, and microservices.

M2P Fintech - Software Engineer | **Chennai, India** **May 2021 - Jul 2021**

- Developed secure login and payment APIs using Java, implementing Single Sign-On (SSO) for streamlined authentication.
- Optimized MySQL joins and indexes, reducing query time by 30–40% in systems handling $43.75B+ in monthly transactions.
- Containerized services with Docker and deployed Java applications on Linux servers, ensuring consistent performance across environments.
- Ran automated Postman test collections validating 20+ endpoints, improving integration reliability across partner-facing services.
- Supported backend stability and scalability for a platform serving 1,200+ financial institutions globally.

Education

George Mason University - M.S. in Computer Science | Fairfax, VA (GPA: 3.73/4.0) **Aug 2023 - May 2025**

Anna University - B.E. in Computer Science and Engineering | Chennai, India **Aug 2017 - Apr 2021**

Academic Projects

PatriotPilot - NLP-Based University Chatbot | **LINK** **Aug 2024 - Dec 2024**

- Developed a university chatbot using a RAG framework, deployed on a prototype GMU website.
- Scraped and preprocessed 100+ university pages into structured JSON pairs, reducing noise while retaining semantic meaning.
- Embedded text using E5-Large-v2 and indexed it with FAISS for sub-second dense retrieval; attained 120ms average response latency on local deployment (GMU Hopper cluster).
- Fine-tuned Qwen 2.5 14B Instruct using LoRA-based instruction tuning, enabling efficient and accurate response generation.
- Achieved >70% recall and precision on a university query set of 500+ queries, delivering accurate and context-aware responses.

Survey Management System - Full Stack Web Application | **LINK** **Sep 2024 - Dec 2024**

- Engineered RESTful APIs using Spring Boot with JPA/Hibernate and Vue.js/Angular (frontend), creating 10+ endpoints for survey data management and reduced database read/write latency by 15%, improving application responsiveness.
- Containerized the full stack using Docker, bundling frontend and backend into a single Spring Boot JAR for local deployment.
- Streamlined testing and deployment via Jenkins CI/CD pipeline, reducing manual effort by 40%; configured infrastructure with Terraform.
- Conducted testing with 50+ student users, incorporating feedback to refine usability and validating stability under concurrent load.

Job Recommendation System | **LINK** **Feb 2024 - May 2024**

- Built a Flask-based job recommender that ranked 10,000+ job listings based on semantic similarity to resumes and user location.
- Used DistilBERT for embedding and semantic scoring; reached >90% match accuracy on a test set of 20+ resumes.
- Incorporated geolocation filtering using the Nominatim API, tailoring results to nearby job opportunities.
- Processed and cleaned 10,000+ job descriptions using Pandas and NLTK, standardizing text for accurate semantic comparison.
- Created a lightweight resume parser to extract key sections from .pdf and .docx files using pdfplumber, python-docx, and regex-based section detection, achieving 95%+ field extraction accuracy across varied formats.
- Validated recommendation quality via internal testing with 50+ peer users and iterative refinements over 3 test cycles.