Harsha Vardhan M
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Software Engineer | Full Stack Developer

Summary

Software Engineer and Machine Learning Researcher with **4 years of experience** in **full-stack development, backend engineering, and AI**. Skilled in **Python, Java, SQL, AWS, and Azure**, I build scalable applications and optimize cloud-based architectures. At **OpenText**, I led automation and mentored interns, while my research at **UNT** focused on **deep fake detection using GANs and CNNs**. Passionate about **AI, cloud technologies, and system optimization**, I thrive on solving complex problems and integrating machine learning into real-world applications.

SKILLS

Coursework:

Data Mining, NLP, Software Engineering, Machine Learning, Feature Engineering, Data Modeling, Computer Algorithms

Areas of Expertise: Full-Stack Development, Backend Engineering, API Development, Data Engineering, Cloud Computing, CI/CD Pipelines, Microservices, Infrastructure as Code (IaC), Machine Learning, Deep Learning, NLP, Computer Vision, Feature Engineering, Test Automation, Web & API Security, Performance Optimization, Agile & Scrum Methodologies, System Architecture

Tools & Technologies:

Programming Languages: Python, Java, C++, JavaScript (ES6+), TypeScript, SQL

Web Development: React.js, Next.js, Node.js, Express.js, Spring Boot, HTML, CSS, Tailwind CSS, jQuery

Databases & Storage: MongoDB, PostgreSQL, MySQL, Cloud SQL, DynamoDB, Redis, Firebase

Cloud & DevOps: AWS (EC2, Lambda, S3, RDS), Google Cloud Platform (GCP), Azure, Docker, Kubernetes (GKE, EKS), Terraform, Jenkins, GitLab CI/CD, Ansible, Prometheus, Grafana

Machine Learning & AI: TensorFlow, PyTorch, OpenCV, Scikit-Learn, NLP (BERT, LLMs, Wav2Vec2), GANs, Feature Engineering, Deep Learning, Computer Vision, Transfer Learning

Automation & Testing: Selenium, Katalon Studio, Cypress, Cucumber, Postman, JMeter, TestNG, PyTest, JUnit, Mockito

Professional Experience

PNC Financial Services | Full Stack Developer | Remote Jan 2024 – Present

- Designed and implemented a scalable React.js component library, reducing UI development time by 40% and improving code consistency across multiple projects.
- Employed RESTful APIs using Spring REST, improving data exchange efficiency and reducing integration development time by 25%, enabling faster feature rollouts.
- Engineered high-performance RESTful APIs using Spring Boot, optimizing request handling to increase API throughput by 30% and enhancing frontend-backend communication efficiency.
- Optimized and maintained CI/CD pipeline with Jenkins and Docker, reducing deployment time by 50% and ensuring seamless integration of backend updates in an agile environment. Enhanced application response time by 30% by leveraging Amazon DynamoDB for high-performance NoSQL data access, reducing latency in critical financial transactions.

University of North Texas | Machine Learning Research Assistant | Denton, Tx Jan 2023 – Dec 2023

- Developed GAN-based deep fake detection models, enhancing feature extraction with CNNs, increasing detection accuracy by 15% and reducing false positives by 18%.
- Refactored ML models in Python, TensorFlow, and OpenCV, implementing PCA for dimensionality reduction and HOG for feature extraction, increasing precision by 20% and reducing training time by 25%.
- Processed **500K+ deep fake images** by applying **Gaussian noise reduction, data augmentation (rotation, cropping), and PCA**, increasing model robustness by **25%** against adversarial attacks.
- **Benchmarked deep fake detection models** using **LFW and FFHQ datasets**, applying **k-fold cross-validation**, improving generalization by **22%** across lighting, angles, and facial structures.
- Enhanced **model adaptability** using **transfer learning** on pre-trained **ResNet models**, reducing error rates by **15%** and increasing inference speed by **30%**.

- Integrated speech-to-text NLP (**Wav2Vec2**) and voice fingerprinting for multi-modal deep fake detection, improving accuracy by **10%** for audio-visual manipulation.

OpenText | Software Engineer | India June 2021 – June 2022

- Developed and optimized a scalable microservices architecture (Java, React, Node.js, Spring Boot), using gRPC inter-service communication and JWT-based RBAC, reducing API response time by 30% and unauthorized access by 25%.
- Developed high-traffic RESTful APIs handling 100K+ daily requests, integrating Redis caching and optimizing Spring Data JPA queries, improving database efficiency by 40% and reducing latency by 35%.
- Automated CI/CD pipelines (Jenkins, GitLab) by containerizing deployments with Docker and implementing rollback mechanisms, increasing deployment frequency from weekly to daily and reducing failures by 20%.
- **Led DevOps collaboration**, improving CI/CD pipelines by integrating **Prometheus for monitoring** and **Grafana for alerting**, reducing incident resolution time by **45%** and improving rollback efficiency by **30%**.
- Enhanced system reliability with Spring Cloud Stream, optimizing API request throughput by 30% and reducing system downtime by 20%.
- Mentored and led a team of 6 interns, conducting TDD workshops and hands-on API development sprints, increasing team onboarding efficiency by 40% and reducing onboarding time from 3 weeks to 2 weeks.
- **Implemented unit and integration testing** using **JUnit, Jasmine and Mockito** achieving **95% test coverage** and reducing defect rates by **60%**, leading to enhanced production stability.
- **Designed and automated cloud infrastructure deployment** on **GCP** using **Kubernetes (GKE) for auto-scaling** and **Terraform for IaC**, cutting infrastructure costs by **25%** and improving deployment efficiency by **50**%.
- Developed and optimized interactive front-end components with React, HTML, CSS, and Bootstrap, reducing render blocking scripts, **improving** 20% **in page load speeds** and a **15% increase in user engagement**.
- Designed automation frameworks using Katalon Studio and Selenium, increasing test coverage from 70% to 95% and reducing manual testing efforts by 50%.

OpenText | Software Engineering Intern | India Dec 2020 – June 2021

- **Developed and automated 200+ functional and regression test cases** using **Selenium, Java, and Cucumber**, reducing manual effort by **40%** and increasing test coverage by **60**%.
- Integrated Jenkins and GitLab CI/CD, automating build validation and releases, reducing build time by 35% and accelerating cycles by 50%.
- Diagnosed & Resolved 20+ critical defects (UI, API, database), increasing bug resolution speed by 45%.
- Developed 200+ automated functional and regression test scripts (Katalon Studio, Selenium), increasing testing efficiency by 60% and ensuring stability across releases.
- Implemented BDD testing (Cucumber, Gherkin), reducing dev-QA miscommunication by 40% and increasing defect detection by 35%.
- Optimized Selenium test suites by implementing parallel execution with TestNG, reducing test execution time by 20% and increasing CI/CD pipeline stability.

Education

University of North Texas | Master's in Computer Science | Aug 2022 - May 2024 | GPA: 3.8

Jawaharlal Nehru Technological University | Bachelor's in Computer Science & Engineering | Aug 2017 - June 2021

Projects

Coronavirus Dashboard with Python

Technologies: Python, NumPy, D3.js, Plotly, Dash, Bootstrap

- Developed an interactive real-time COVID-19 dashboard visualizing global case trends using Plotly and D3.js.
- Designed automated ETL pipelines to fetch live API data, reducing manual updates by 90%.
- Implemented advanced visual analytics for region-based case comparisons and predictions.

Scalable Online Bookstore (Microservices-Based)

Technologies: Spring Boot, Docker, Kubernetes, MySQL, JWT Authentication, Redis, RabbitMQ

- Built a scalable e-commerce bookstore using Spring Boot microservices, capable of handling 5,000+ concurrent users.
- Implemented JWT-based authentication, ensuring secure user sessions and role-based access control (RBAC).
- Integrated Redis caching for optimized database performance, improving query response time by 40%.
- Deployed Dockerized services on Kubernetes (GKE) with auto-scaling, reducing infrastructure costs by 30%.
- Integrated a personalized book recommendation API, enhancing user engagement by 25%.

Student Management System

Technologies: Django, SQLite, JavaScript, Python

- Led the development of a student management system with course selection, attendance tracking, and result management.
- Designed interactive summary charts for administrators, improving data visualization and decision-making. Implemented a user-friendly interface for students and staff, increasing system usability and engagement.

Road & Field Boundary Detection

Technologies: MATLAB, Image Processing, Edge Detection

- Led a 3-member team in developing a satellite imagery-based road and field boundary detection system. Designed and implemented data preprocessing techniques to enhance image clarity and model performance.
- Applied edge detection algorithms to improve boundary identification, creating a detailed project report with insights on model accuracy and future improvements.

US Accident Analysis & Prediction

Technologies: Python, Neural Networks, MLP, EDA

- Conducted exploratory data analysis (EDA) on traffic accident datasets, identifying patterns across time, weather conditions, and geographical regions.
- Preprocessed data using One-Hot Encoding and Feature Scaling techniques, ensuring high model accuracy.
- Developed a predictive model using Multi-Layer Perceptron (MLP), achieving 87% accuracy and an ROC-AUC score of 84%.

Early Diabetes Prediction Using Random Forest

Technologies: Python, Random Forest, Data Preprocessing, EDA

- Developed an early diabetes prediction system using Random Forest, achieving 80% accuracy, outperforming other ML models.
- Conducted model comparisons and demonstrated Random Forest's superiority in diagnosing diabetes, providing valuable insights for healthcare applications.

Certifications

Microsoft Certified: Azure Fundamentals – Verified foundational cloud computing knowledge.

Docker Foundations Professional Certificate – Demonstrated expertise in containerization and CI/CD integration.

Leadership & Achievements

Vice President, ML & AI Club – Led AI workshops, hackathons, and mentored 20+ students, increasing participation by 60%.

Recognized for Excellence at OpenText – Received 2 Appreciation Certificates for contributions to microservices and automation projects.