SIDDHARTH RANGWA

Software Developer & Machine Learning Engineer

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PROFESSIONAL SUMMARY

Software Developer and Machine Learning Engineer with hands-on experience building multi-modal biometric authentication systems and real-time AI inference pipelines. Expertise in deploying deep learning models, image processing, and real-time inference. Proficient in Python, Flask, TensorFlow, Docker. Demonstrated ability to optimize model performance, architect scalable backend systems, and deliver innovative solutions in fast-paced environments. Strong interest in computer vision and AI system development, with practical exposure to building and integrating production-ready solutions.

TECHNICAL SKILLS

Programming & Scripting: Python, JavaScript, SQL, HTML/CSS, Bash
Machine Learning & AI: Deep Learning, Computer Vision, RAG, LLM, NLP, TensorFlow, PyTorch, Scikit-learn, Model Optimization
Backend & APIs: Flask, RESTful APIs, Microservices, FastAPI, API Gateway, Authentication Systems
Computer Vision: OpenCV, Image Segmentation, Object Detection, Feature Extraction, OCR, Biometric Recognition
DevOps & Cloud: Docker, Docker Swarm, Kubernetes, CI/CD, Google Cloud Platform, Model Deployment
Data Engineering: NumPy, Pandas, Data Preprocessing, ETL Pipelines, Dataset Management, Signal Processing
Development Tools: Git, GitHub, Linux, Jupyter, VS Code, Postman, Unit Testing, Debugging

PROFESSIONAL EXPERIENCE

Software Developer
April 2025 – Present

XS Infosol, Noida, India

- Designed and developed a multi-modal biometric authentication platform integrating Iris, Palm, Face, and Voice recognition for secure identity verification.
- Built complete image processing pipelines including preprocessing, segmentation, normalization, and feature extraction using OpenCV and deep learning models.
- Developed and trained deep learning models for biometric feature extraction and real-time inference using TensorFlow and PyTorch.
- Implemented voice authentication using SpeechBrain and Vosk with custom feature extraction and signal processing techniques.
- Designed modular and scalable RESTful APIs using Flask to expose authentication services for integration with external systems.
- Structured backend architecture to support model loading, inference handling, request validation, and secure response generation.
- Applied model optimization techniques such as quantization and pruning to improve inference efficiency.
- Worked on dataset preparation, cleaning, augmentation, and annotation for improving model robustness.
- Implemented logging, debugging, and error-handling mechanisms to improve system stability and maintainability.
- Participated in code reviews and collaborated with cross-functional teams to integrate AI models into production workflows.

Python Developer
January 2025 – April 2025

XS Infosol, Noida, India

- Developed RESTful APIs using Flask for a document recognition system with optimized routing and middleware design.
- Built a computer vision pipeline for palm detection using OpenCV, improving hand region identification through contour analysis and adaptive thresholding.
- Managed dataset lifecycle including data collection, annotation, augmentation, and version control to improve model generalization.
- Implemented data preprocessing pipelines using NumPy and Pandas to enhance processing efficiency.
- Integrated machine learning models into backend workflows with structured unit testing and validation practices.
- Gained hands-on experience in converting research-level models into deployable backend modules.

Frontend Developer Intern
July 2023 – August 2023

Research Design and Standards Organization, Lucknow, India

- Developed responsive web interfaces for internal government systems using HTML, CSS, and JavaScript, ensuring cross-browser compatibility and accessibility best practices.
- Collaborated with the IT team to integrate frontend components with backend services through RESTful API consumption and dynamic content rendering.
- Applied structured debugging and testing practices to improve code quality, stability, and overall system reliability.
- Assisted in implementing UI enhancements and performance optimizations for smoother user experience.
- Gained practical exposure to real-world development workflows in a government technology environment.

EDUCATION

Bachelor of Technology in Computer Science 2020 – 2024
Dr. A.P.J. Abdul Kalam Technical University CGPA: 7.7/10
Relevant Coursework: Machine Learning, Deep Learning, Computer Vision, Data Structures, Algorithms, Database Systems

CERTIFICATIONS

- Python – Kaggle
- Introduction to Generative AI – Google
- Introduction to Large Language Models – Google
- Responsive Web Design – freeCodeCamp

KEY PROJECTS

Smart Resume Matcher (Browser Extension):
Developed a browser extension that analyzes resumes against job descriptions to generate compatibility scores and improvement suggestions. Implemented transformer-based NLP models for semantic similarity and contextual keyword matching. Integrated Compromise.js for structured text parsing and skill extraction. Designed a resume-to-JD matching pipeline to identify skill gaps and recommend targeted improvements.

End-to-End Biometric Authentication System:
Designed and developed a multi-modal biometric authentication platform integrating voice biometrics and palm recognition using deep learning techniques. Built complete preprocessing, feature extraction, and inference pipelines. Deployed the system using Dockerized Flask APIs with modular and scalable architecture.

Intelligent Document Processing Pipeline:
Built a machine learning pipeline for document classification, OCR processing, and structured information extraction using CNN and transformer-based models. Implemented data preprocessing, model training, and backend integration workflows for automated document analysis.

Real-Time Object Detection System:
Implemented a YOLOv5-based object detection system optimized for edge deployment. Applied model optimization techniques to enable efficient real-time inference on lightweight hardware environments.