VANSHI PATEL

857-308-6059 • patel.vanshi@northeastern.edu • linkedin.com/in/vanshi-patel-2k2 • github.com/vap2999

EDUCATION

M.S., Software Engineering Systems Sept 2024 - May 2026
Northeastern University, Boston, MA

B.E., Computer Engineering Sept 2020 - Jun 2024
Gujarat Technological University, Surat, Gujarat

TECHNICAL SKILLS

Programming Languages: Python, Java, C, R
Web Technologies: Django, React.js, REST APIs
Development Tools: VSCode, Android Studio, IntelliJ, GitHub, Jira, Docker, Kubernetes, Postman, Linux
Databases & Visualization: MySQL, PostgreSQL, Power BI, Tableau, Firebase, HDF5
Machine Learning Frameworks: PyTorch, TensorFlow, Keras, Scikit-Learn, XGBoost, OpenCV, YOLO
Natural Language Processing: NLTK, SpaCy, Hugging Face Transformers, BERT
Parallel Computing: Distributed Computing (Joblib, Dask), Data Parallelism, Distributed Data Parallel, FSDP

PROFESSIONAL EXPERIENCE

Larsen & Toubro| Video Analysis Intern Feb 2024 - Jul 2024

- **Enhanced Video Analytics Pipeline:** Implemented **YOLOv5** for object detection, improving tracking efficiency by 30% through automated data pre-processing and model tuning.
- **Engineered Performance Monitoring API:** Created **RESTful API** for real-time system metrics, reducing reporting time by 25% with automated dashboards and alerts.
- **Architected Microservices Architecture:** Refactored monolithic system into containerized microservices using **Docker** and **Kubernetes**, increasing system scalability and resilience.
- **Streamlined Data Pipeline Architecture:** Collaborated with data engineering team to optimize **ETL processes**, resulting in 15% reduced downtime and improved system reliability.

Broader AI| Data Science Intern Jul 2023 – Jan 2024

- **Built Educational Platform:** Designed **Flask**-based exam portal with authentication and automated scoring, integrating **ML features** that improved system performance by 20% and student participation by 40%.
- **Pioneered Computer Vision Solution:** Created document scanning system with **OpenCV** achieving 95% accuracy through optimized image processing and object detection algorithms.
- **Spearheaded NLP Applications:** Built and deployed model generating 200+ domain-specific interview questions with **Streamlit** visualizations, streamlining candidate preparation and enhancing hiring process efficiency.
- **Optimized Technical Infrastructure:** Redesigned **PostgreSQL** schema with efficient indexing and implemented **Swagger** API documentation, reducing query times by 60% and enhancing team collaboration.

PROJECTS

Real-Time Parallel Shoplifting Detection using Multimodal AI
PyTorch, CUDA, ResNet, Joblib, Dask, OpenCV, Weights & Biases

- Architected **distributed** shoplifting detection system combining **computer vision** and **pose estimation** techniques, achieving **81%** accuracy and **0.78 F1 score** through **multi-task learning** approach.
- Implemented and benchmarked multiple **parallelization strategies** (DP, DDP, FSDP) for model training, reducing training time by **39%** and enabling efficient **GPU resource utilization** with 3 NVIDIA GPUs.

Differential Diagnosis Based on Patient's Symptoms
Python, Streamlit, Human Phenotype Ontology, LLM Integration

- Developed **phenotype-driven** disease matching application using **Human Phenotype Ontology** (HPO), enabling healthcare professionals to identify potential **genetic disorders** with advanced **similarity scoring**.
- Implemented **AI-powered** symptom recommendation system integrated with **Llama API**, featuring **clinical notes conversion** and visualization of **disease networks** that improved diagnostic accuracy.

ParkBnB: Smart Parking Management System
Spring Boot, React, PostgreSQL, Docker, Stripe API

- Engineered **full-stack** parking platform with **geolocation-based** search system, reducing parking spot discovery time by **20%** and implementing **secure payment processing** with **99.9% uptime**.
- Designed **scalable microservices architecture** using Docker and Spring Boot, enabling seamless integration of **real-time availability tracking** and **automated notification systems**.

AWARDS AND ACHIEVEMENTS

- **Harvard Rare Diseases Hackathon**: Awarded for developing an AI-driven diagnostic solution.