Vaibhavi Madhav Deshpande

LinkedIn | Portfolio | GitHub | vmd703@gmail.com

Education

Master of Science - Computer Science | University of Central Florida | GPA: 3.9 Aug'22 - May'24

Bachelor of Technology - Electronics & Telecommunication | Pune University Aug'18 - May'22

Coursework: Design & Analysis of Algorithms, Data preparation, Machine Learning, Database Management Systems, Probability and Statistics, Data analysis, Natural Language Processing, Computer Vision, Digital Image Processing

Skills

- **Programming & Scripting:** Python (Pandas, NumPy, Scikit-learn), C++, JavaScript, SQL
- **Machine Learning & AI:** TensorFlow, PyTorch, OpenCV, LangChain, Matplotlib, Seaborn, spaCy, NLTK, RAG
- **Database Management**: PostgreSQL, MySQL, SQLite, MongoDB
- **Tools & Technologies**: Git, GitHub, Docker, Kubernetes, AWS (S3, RDS), FastAPI, Postman, Power BI, Tableau
- **Certificates**: AZ-900 Microsoft Azure Fundamentals, Google Analytics

Professional Experience

Software Engineer | Business & Engineering Solutions Team Inc. (BEST) June 2025 - Present

- Engineered **Python-based ETL workflows** using Pandas and SQLAlchemy to clean and standardize ERP Inventory and Production sensor data, ensuring accurate inputs for dashboards and analytics.
- Developed **FastAPI REST APIs** to serve real-time ERP Maintenance and Orders data to **Power BI** dashboards, enabling live machine utilization and inventory tracking.
- Implemented predictive maintenance models using **Python (scikit-learn, XGBoost**) on historical sensor and production logs from the ERP Maintenance module, generating early failure alerts and reducing unplanned downtime.
- Initiated an **NLP-based issue logging system** using spaCy, performing text preprocessing, classification, and embeddings-based similarity search to categorize ERP error logs, significantly reducing manual log review and accelerating troubleshooting.

Research Assistant | University of Central Florida Aug 2024 - May 2025

- Processed and standardized **1M+ clinical patient records** (50+ features, including spirometry measurements FEV1, FVC, FEV1/FVC ratio) for predictive modeling, generating derived variables such as BMI and lung risk scores.
- Transformed the clinical datasets, by **cleaning, normalizing, and structuring** patient data to create high-quality inputs for regression and classification models.
- Developed and **tuned supervised ML models**, achieving a 15% RMSE reduction over baseline, with feature importance analysis identifying the top 10 predictive indicators of lung age.
- Created **data visualizations** and reports to communicate insights to researchers and clinicians for decision-making support.

Software Engineer Intern | PALASH Healthcare Solutions Pvt. Ltd. Jul 2020 - Aug 2022

- Worked on testing and validating backend APIs to ensure smooth exchange of patient and insurance claim data, reducing delays in claim approvals.
- **Automated OCR-based data entry** by extracting structured information from scanned documents, PDFs, and images using **AWS Textract**, improving the accuracy of patient records.
- Built a **Playwright-based automation** to capture COVID-19 vaccination slot availability from portals and update the HIMS scheduler, streamlining mass immunization drives.
- Developed **Power BI dashboards by cleaning and transforming hospital admission data** with Python and SQL, giving management real-time visibility into bed availability and patient flow during the COVID-19 surge.

Data Analyst Intern | Kaizen Chemtech Jan 2020 - Jun 2020

- Collaborated to develop automated data workflows using SQL, Python, and Excel, generating Sales Product dashboards in Power BI and **delivering insights to improve sales strategies and customer satisfaction.**
- Performed data **cleaning and transformation using Pandas and NumPy**, including missing value imputation, outlier handling, normalization, and feature engineering, ensuring an analysis-ready dataset.
- Created derived metrics to analyze sales performance and inventory trends.Developed **predictive models to forecast sales** trends with 90% accuracy, helping reduce inventory costs by approximately 12%.

Academic Projects

AI-Powered automated Order Validation System | Python, FastAPI, React, Claude, Docker, AWS

- Developed a **hackathon-winning intelligent backend** with FastAPI, leveraging an AI agent **(Anthropic Claude)** for automated email text parsing and order validation. Utilized Object-Oriented Design & optimized data structures for efficient catalog lookups. Deployed using Docker containers to AWS, leveraging S3 buckets for robust data storage.

Multi-Agent Medical Intelligence System | Python, FastAPI, Claude LLM, LangChain, LangGraph, MCP, BraveAPI

- Built a multi-agent AI system using **Claude LLM with RAG** to retrieve medical evidence from PubMed and BraveSearch. Orchestrated agents with **LangGraph** & **MCP** to manage multi-step workflows and share context efficiently. Built FastAPI microservices for real-time parsing of user queries & synthesis of retrieved evidence, delivering actionable medical insights.