SUVRAT JAIN

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WORK EXPERIENCE

DIESELCORE Houston, TX

AI/ML Engineer May 2024 – Present

- **Developed & deployed an AI chatbot** using **RAG pipelines** (**LlamaIndex, FAISS, Pinecone, ChromaDB**), implementing **BM25, Cohere Reranker, ColBERT** for retrieval, and integrating **LLMs** on **Microsoft Teams**, reducing document lookup time by **60%**.
- **Built document parsing and embedding pipelines**, processing **documents at scale,** with **Python, LlamaIndex, OpenAI embeddings**, and optimizing retrieval precision via **reciprocal rank fusion (RRF) & hybrid search**.
- **Designed a vision-based part identification system** for **edge devices (tablets/phones)**, enabling **real-time classification from live camera streams** using **YOLOv8, CLIP, similarity matching**, achieving **~92% accuracy**.
- **Integrated vision AI with ERP systems**, automating **warehouse part tracking & logging**, reducing **manual errors by 40%**, via **FastAPI, OpenCV, PyTorch, REST APIs**.

GOLISANO INSTITUTE FOR SUSTAINABILITY, RIT Rochester, NY

Machine Learning Engineer May 2022 – May 2024

- **Developed & deployed** automated **vision system for sorting remanufactured parts** (**YOLOv8, Siamese Networks, PyTorch, TensorFlow, Docker**) achieving **95% accuracy, 5s cycle time**. reducing manual labour time by ~50%.
- **Built a garment classification & segmentation system** (**YOLOv8, UNet, SAM, PyTorch, NIR imaging**) integrating **GCode generation for automated laser cutting**, optimizing **material recovery by 30%**.
- Designed a hybrid YOLO + **similarity matching** system, preventing unknown misclassification, increasing identification accuracy by 30%. (PyTorch, FAISS, OpenCV)
- **Designed scalable ML pipelines**, collecting **18K+ images**, expanding datasets by **30%**, boosting accuracy by **12%**, and **deploying cross-system solutions with Docker, FastAPI, MLflow**.

EDUCATION

ROCHESTER INSTITUTE OF TECHNOLOGY Rochester, NY

Master of Science (M.Sc.) in **Data Science** 2021 - 2023

PROJECTS & CONTRIBUTIONS

- **HUE Vision:** Developed a real-time eye-tracking web app using **TensorFlow.js**, **clmtrackr.js**, and **JavaScript**, integrating ML-based gaze prediction & heatmap visualization for in-browser inference. (Demo)
- **OpenNotebook (Open Source contributor)**: Rebuilt the Streamlit-based frontend with **Node.js**, **Express**, **HTML/CSS/JS** for a privacy-focused **AI-powered knowledge assistant**, integrating **Python APIs**, test scripts, and documentation.

PUBLICATIONS

- **Islam, A., Jain, S., Nenadic, N.G., Thurston, M.G., Greenberg, J., & Moss, B. (2024). Image-based machine learning in automotive used parts identification for remanufacturing. In N. Nasr (Ed.), Technology innovation for the circular economy (Chapter 39). https://doi.org/10.1002/9781394214297.ch39**
- **R. Parsons, S. Jain, A. Islam, M. Walluk, and M. Thurston, " Contaminant Investigation and Pre-Processing Opportunities for Textile-To-Textile Recycling," Journal of Advanced Manufacturing and Processing 7, no. 4 (2025): e70034, https://doi.org/10.1002/amp2.70034**

SKILLS

Programming: Python, Java, C++, SQL, HTML, CSS, JavaScript, jQuery, Node JS

Machine Learning & AI: Scikit-learn, NumPy, Pandas, OpenCV, PyTorch, TensorFlow, Keras

Tools & Platforms: Tableau, Power BI, PySpark, FastAPI, Flask, Selenium, Jupyter, Streamlit, SalesForce Cloud, AWS, GCP, Azure, Docker, Git, CI/CD, MLflow, LangChain, LlamaIndex, Vector database