

Raktimjyoti Parashar

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Profile

Skilled AI professional with 5+ years of experience in machine learning algorithms, model development, and Python programming. Proficient in using ROS, Docker, TensorFlow, PyTorch, OpenCV and Pandas libraries, with expertise in Computer Vision and NLP for healthcare and robotic applications.

Skills

Programming and Scripting — Python (NumPy, Pandas, scikit-learn, TensorFlow, PyTorch), SQL, MATLAB, CUDA.

Data Manipulation and Analysis — Data cleaning, visualization and preprocessing, EDA, Statistical analysis, Feature engineering, Time series analysis.

Big Data Technologies — Apache (Hadoop, Spark, Kafka), Distributed computing frameworks (MapReduce).

Artificial Intelligence & Machine Learning — Random Forest, Linear Regression, SVM, Decision Tree, ARIMA, Keras, Sci-kit Learn, Deep Learning Algorithms (CNN, Transformers, ViT), NLP, RAG.

Computer Vision, NLP — OpenCV, Open3D, YOLO, NeRF, Structure from Motion (SfM), Optical Flow, 3D Reconstruction, Kalman Filters, EKF, DeepSORT, NLTK, BERT.

Professional Experience

Research Engineer, GRASP 06/2023 – Present | PA, USA

- Developed a 6-DOF, occlusion-aware object tracking pipeline using computer vision models (SE(3)-TrackNet, Segment Anything, XMem) and Realsense depth camera, which enabled computing optimal grasp poses for robotic handling of novel objects in cluttered environments. Integration was done using ROS.
- Designed a pipeline for thermal camera based human detection using deep neural network for human and object detection in low-light settings. Created training dataset using ThermalGAN.

Data Science Intern, Penn Medicine 06/2022 – 08/2022 | PA, USA

- Engineered a 3D **U-Net** deep learning model for brain tumor segmentation using **MRI** data in DICOM format, achieving high sensitivity (0.902) and specificity (0.9894) for edema and enhancing tumor detection, significantly improving diagnostic accuracy and reducing analysis time for radiologists.
- Developed a state-of-the-art AI chest X-ray classifier using **DenseNet121** and advanced data preprocessing techniques, achieving high diagnostic accuracy with AUROC scores of 0.896 for Cardiomegaly and 0.802 for Pneumothorax, surpassing average radiologist performance and enhancing disease detection in healthcare.
- Developed a time series forecasting model with **Databricks**, **Apache Spark**, and **Facebook Prophet**, achieving an RMSE of 4.4 and MAE of 3.49, optimizing healthcare supply chain management across multiple facilities.

Data Scientist, Genpact 11/2017 – 07/2021 | Remote, India

- Designed a scalable multi-cloud solution using **Snowflake** and **AWS** for cancer patient length-of-stay data analysis, incorporating Python libraries and large language models for advanced analytics and insights.
- Developed data-driven methods integrating cancer patient insights with supply chain needs: Predicted a 20% reduction in shortages and optimized inventory levels, resulting in a 15% improvement in hospital supply chain management efficiency.
- Employed **MongoDB** as a core technology for data management and analysis in biotech research, enabling sophisticated data aggregation, storage, and retrieval processes. Utilized MongoDB to facilitate efficient data pulling and integration within Snowflake and AWS platforms, supporting complex scientific computations and insights.
- Optimized hospital logistics by implementing bioinformatics workflows and developing data pipelines: Facilitated analysis of large datasets, integrating ML algorithms for real-time cancer patient outcome predictions and resource allocation, improving hospital logistics efficiency by 35%.

Education

Master of Science, University Of Pennsylvania 08/2021 – 05/2023 | Philadelphia, USA
Mechanical Engineering and Applied Mechanics (AI & Robotics)

Bachelor of Technology, Manipal Institute Of Technology 06/2013 – 09/2017 | Karnataka, India
Mechanical Engineering and Manufacturing Technology

Projects

- Pioneered the use of advanced machine learning and deep learning models with PyTorch, OpenCV, and Scikit-learn for accurate polyp detection and segmentation in colonoscopic images, significantly enhancing diagnostic precision and improving patient outcomes in colorectal cancer screenings.
- Developed an NLP pipeline using **BERT** to extract disease labels from clinical reports and perform question answering, enhancing the accuracy and efficiency of medical data retrieval for healthcare professionals.