

MD MOSHIUR RAHMAN

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PROFESSIONAL SUMMARY

Machine Learning Engineer with industry experience designing, building, and deploying end-to-end computer vision systems and ML pipelines in production environments. Proficient with Python, OpenCV, PyTorch, TensorFlow, Docker, FastAPI, and has used them extensively in image processing, real-time model inference, object detection, and 3D points cloud analysis. Self-directed, enthusiastic, and collaborative in solving problems creatively and production-oriented using Deep Learning.

TECHNICAL SKILLS

Machine Learning & Deep Learning: PyTorch, TensorFlow, Scikit-learn, XGBoost, Random Forest, PointNet

Computer Vision & Image Processing: OpenCV, YOLOv8, YOLOv6, Object Detection, 3D Point Cloud Processing, Image Segmentation

MLOps & Deployment: Docker, FastAPI, CI/CD, GitHub Actions, Model Evaluation.

Data Engineering: Python, NumPy, Pandas, SQL, Feature Engineering, Data Pipelines, Synthetic Data Generation

Tools & Platforms: Git, Linux (Ubuntu), PostgreSQL, MySQL, VS Code, Postman

Methodologies: Agile, End-to-End ML Lifecycle, Technical Documentation, Collaboration

PROFESSIONAL EXPERIENCE

Junior Machine Learning Engineer

Aug 2022 – Sep 2023

SAMAHAR

- Developed a parking space detection system in Real-Time processing **30 FPS** live video streams using the Python and OpenCV libraries, which were able to detect the status of parking space from live video stream and classify it as either free or occupied, without manual surveillance, and thus, the system could be used for continuous parking space detection.
- Developed an **end-to-end computer vision** measurement pipeline to estimate real-world object sizes from 2D images, with the geometric vision algorithms being transformed from a research prototype into a production ready application that was used for field measurements achieving errors below **2 cm**.
- Design and optimization of a **3D object detection** model designed using LiDAR, processing over **2 million LiDAR points** per scan to extract structured spatial information from raw sensor data and apply it for real-world object detection and measurement tasks, such as PointNet.
- Developed and curated over **25,000** synthetic training sets for enhancing the robustness of 3D models, increasing class diversity and decreasing class imbalance to increase model generalization under different environments.
- Provided an **end-to-end pipeline** that incorporated **YOLOv6 and PointNet** for complete data reconstruction, built a data ingestion, data preprocessing pipeline, object detection pipeline, point-cloud classification pipeline, and data validation pipeline in **one pipeline**.
- Eliminated **27%** of manual data processing tasks by automating Python and SQL pipelines deployed using Docker, enhancing the consistency and reproducibility of workflows and engineering productivity.

Machine Learning Engineer Intern

May 2022 – Jul 2022

SAMAHAR

- Research and prototype computer vision algorithms from recent academic research and justify their suitability for production machine learning solutions using python and OpenCV, and for fast project start-ups.
- Made contributions to machine learning inference services using FastAPI, ranging from deployment to peer code reviews and technical documentation, enhancing maintainability, deployment uniformity and team collaboration during the development lifecycle.

Officeworks

- Deliver technical product consultations and troubleshooting support, translating complex technical concepts into clear, accessible guidance for diverse customers — reinforcing stakeholder communication skills directly applicable to cross-functional ML collaboration.

KEY PROJECTS

Safety-AI Analytics Dashboard | Python · OpenCV · YOLOv8 · FastAPI · PostgreSQL · Docker · GitHub Actions | [\[Demo\]](#) [\[GitHub\]](#)

- Designed and developed a comprehensive threat detection solution using YOLOv8 and OpenCV for real-time video analysis, connected to a React front-end and FastAPI back-end for live inference streaming and threat management.
- Dockerized all backend and frontend services and deployed them through CI/CD pipelines using GitHub Actions, with the goal of having reproducible deployments and automated testing between development and production.
- Created PostgreSQL schemas and FastAPI REST endpoints to store, query and report real-time threat detection events at scale efficiently.

3D Object Classification Pipeline | Python · TensorFlow · PointNet · Trimesh · NumPy | [\[GitHub\]](#)

- Developed an end-to-end deep learning pipeline for point cloud classification from 3D CAD models with the PointNet architecture, including CAD-to-point cloud conversion (Trimesh), model training, model evaluation and model inference.
- Improved model coverage and generalization by developing synthetic data generation workflows for new 3D object categories to generate training sets.

Asset Failure Prediction System | Python · Scikit-learn · Random Forest · NumPy · Pandas · Streamlit | [\[Demo\]](#) [\[GitHub\]](#)

- Designed a two-stage ML pipeline for the failure prediction of industrial assets: physics-based feature engineering and a Random Forest classification model to predict failures and propose automated maintenance procedures.
- Set up an interactive Streamlit dashboard to visualize the predictions in real-time and plan maintenance, connecting the output of the ML model and operational decision-making.

Energy Demand Forecasting | Python · XGBoost · Pandas · NumPy | [\[Demo\]](#) [\[GitHub\]](#)

- Created a time-series machine learning (ML) pipeline that predicts short-term electricity demand using lag and rolling window feature engineering and trained with an XGBoost regression model, withheld-out test sets for purpose of generalization assessment.

Datathon 2.0 – ML Predictive Modelling Competition | Python · Scikit-learn · Feature Engineering

- Developed and optimized ML classification models on synthetic engineering datasets, achieving **75.71% accuracy** through systematic feature engineering, cross-validation, and iterative model selection.

EDUCATION

Master of Science in Computer Science

Oct 2023 – Aug 2025

*Flinders University, Adelaide, Australia***Bachelor of Science in Computer Science & Engineering**

Jan 2017 – Oct 2021

East West University, Dhaka, Bangladesh