Md Shahriar Forhad

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Portfolio — GitHub — LinkedIn
Handshake — Kaggle — G. Scholar

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Summary

Engineer & researcher across robotics, machine learning, and smart manufacturing. Built end-to-end **Machine Learning** & control systems: from data pipelines to PLC/robot integration. Published work, conference demos, and mentoring. No sponsorship required; open to relocation/travel.

Technical Skills

Programming: Python, MATLAB, R, C, SQL
ML/AI: Mask-RCNN, CNN, LSTM (with LIME/SHAP), Transformers (forecasting), KNN, ANFIS
Data: Pandas, scikit-learn, SAS, MySQL, Minitab
Robotics/Automation: ABB, KUKA (calibration/control/ programming), PLC (Siemens 1515SP PC2), Profinet, TIA Portal, HMI, Safety I/O, RobotStudio
Manufacturing/Lasers: LDED, 1 kW/8 kW LaserLine, femtosecond laser coding
Hardware: Raspberry Pi, Arduino, Galvo scanner, Zaber/ Thorlab linear stages

Certifications

Engineer in Training (Texas)
Google Data Analytics Certificate — Capstone Project 1 , 2

Education

Ph.D., Mathematics & Statistics — University of Texas Rio Grande Valley, TX   Aug 2023–Present
GPA: 3.92

M.Sc., Manufacturing Engineering — University of Texas Rio Grande Valley, TX   Jan 2021–Aug 2023
GPA: 3.90

B.Sc., Electrical & Electronic Engineering — CUET, Bangladesh   2008–2012
GPA: 3.32

Academic Summary:
Expertise in **machine learning, robotics, data analytics, manufacturing automation,** and **applied statistics**. Strong in **Python, MATLAB, R, SAS, SQL** and **hardware–software integration**.

Graduate Courses:
Advanced Data Science; Deep Learning; Pattern Recognition & Time-Series Data; Advanced Statistical Methods; Advanced Probability & Statistics; Advanced Numerical Analysis; Advanced Biostatistics; Advanced Machine Learning; Simulation Manufacturing Systems; Advanced Machining; Design of Experiments; Engineering Management; Ergonomics.

Key Projects

- **Mask-RCNN (Kaggle Fruit Dataset):** Trained instance segmentation model; tuned augmentation/anchors; produced pixel-accurate fruit detection for quality control.

- **Sentiment LSTM with Explainability:** Built LSTM pipeline with tokenization/embeddings; applied **LIME/SHAP** to interpret predictions and key terms.

- **Stock Prediction (LSTM/Transformer):** Time-series modeling with feature engineering; compared performance of LSTM vs. Transformer architectures.

- **Advanced Research Toolsets & Simulation Projects:** Developed multiple academic and applied projects utilizing **Generative Adversarial Networks (GAN)**, **Reinforcement Learning (OpenAI Gym)**, and **URDF-based robotic modeling**. Applied **Selective Laser Melting (SLM)** simulation, **Design of Experiments (Minitab)**, and **SIMIO** for manufacturing process analysis. Designed CAD components with **SolidWorks** and **Fusion 360**; performed human-interaction tracking using an **Eye Tracker (ETVision Argus Science)**. Implemented **Web scraping** pipelines integrated with **MySQL**, and performed data analysis using **R (2 yrs)** and **Python (4 yrs)**.

- **Additive Manufacturing Control (Python):** Solely programmed control of **galvo scanner & laser**, synchronized Zaber/Thorlab stages; auto-created **G-code** from CSV (position/laser parameters) to drive custom AM machine.

- **LDED System Integration:** Implemented **Profinet** among powder feeder, ABB robot, and **Siemens 1515SP PC2 PLC**; integrated safety relays; TIA Portal/HMI; Safety I/O; RobotStudio.

- **KUKA/Lasers:** Performed KUKA calibration/control/ programming; operated **1 kW & 8 kW LaserLine** systems; executed femtosecond laser coding.

- **Gesture-Controlled Robot Demo:** Presented Python-driven gesture control at *Defense Manufacturing Expo 2022* (UTRGV).

- **Mentoring:** Student mentor, *IDREAM4D Internship* (Jun–Aug 2021); led team to build a working machine.

Research Experience

Graduate Research Assistant — University of Texas Rio Grande Valley, Edinburg, TX
Jan 2021–Dec 2021; Jun 2022–Aug 2022; Aug 2023–Present

- Python control for galvo & laser; integrated Zaber/Thorlab stages; generated G-code from CSV for additive manufacturing toolpaths.
- Raspberry Pi/Arduino control; built computer-based control interfaces for system integration and testing.
- Gaze-tracking with collaborative robots for automated metrology & reverse engineering.
- Mentored students (IDREAM4D 2021) to program a functional robotics system.

Selected Projects: Spectral Behavior of FBGs in 3D-Printed Metal; Gaze-Tracking Embedded Cobots for Metrology; Direct Ink Writing of 2D Nanomaterial–Elastomer Nanocomposites.

Teaching Experience

Graduate Teaching Assistant — University of Texas Rio Grande Valley
Jan 2022–Dec 2023

- Manufacturing Processes Lab (MANE 3164): mechanical testing, milling, metallurgy.
- Computer-Aided Design (MANE 3300): SolidWorks, design workflows.

Availability & Work Authorization

- Seeking internship opportunities
- Open to relocation (U.S.)
- No visa sponsorship required

Industry Experience

Assistant Manager — Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)
Dec 2014–Dec 2020

- Built national gas pricing models for re-gasified LNG and domestic supply; supported production & supply budgeting.
- Prepared briefs/responses for national parliamentary queries; coordinated regulatory communications.

Publications & Profiles

- MDPI Sensors (2024)
- ScienceDirect (2024)
- SSRN Working Paper

Last updated: October 19, 2025