Usama Niaz

Assistant Manager

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Professional Profile

"An Aerospace Engineer and Tech Enthusiastic with technically proficient in providing **novel ideas**, **product development,** and achieving **flexible solutions** to difficult and diverse problems."

With my passion and commitment to advancement in technology, I am learning **ML concepts** through Coursera. I have also competed in the **Microsoft Learn AI skill challenge,** determined to remain at the forefront of technology. Eager to delve deeper into Tech and AI, I bring a **"nothing is impossible"** spirit, a resolute work ethic, and a passion for driving innovation.

Education

01 Sep 2016 – 03 Sep 2020 **BSc Aerospace Engineering**
CGPA 3.45/4.00 Institute of Space Technology, Pakistan

Key Achievements

- Received 3rd position for the best research project.

Experience

07 March 2022 – Present **Assistant Manager**
Public R&D Organization, Pakistan

- **Reduced 20%** of the modeling time by writing Python Scripts that autonomously model the joints and bolts in the Finite Element Model.
- Resolving a challenging issue through the **automation** of aerodynamic mesh generation, resulting in a significant **90% reduction** in task duration.
- Helped in **better data analysis** by developing Python scripts that can read data on the monitor points in the Finite Element Models and generate the **LaTeX** file for reporting.
- Created **MATLAB** program to transform experimental data obtained from sensors into a Finite Element Model, which successfully helped in **validating and fine-tuning** the results.
- Enhanced the **efficiency by up to 60%** by creating a Python program that reads the data from the Flutter & Gust Analysis and generates a LaTeX report.
- Collaborated closely with peers to **build an in-house program** that will obviate our reliance on commercial software saving 350,000 USD.
- Developed Python scripts for the **automation** of repetitive and time-consuming tasks.

01 Jan 2021 – 31 Dec 2021 **Research Assistant**
Propulsion Engineering and Research Lab, IST, Pakistan

- Written custom solvers in **OpenFOAM (C++ wrapper)** for specialized Computational Fluid Dynamic (CFD) analysis.
- Developed **Python scripts** to perform data extraction and analysis on CFD results.
- Designed and optimized custom boundary conditions in **OpenFOAM (C++ wrapper)** for better modeling.
- Collaborated in centrifugal compressor design by writing **MATLAB** programs.
- Performed CAD parametric study by writing **Visual Basic Scripts**.

Projects

</> California House Price Predictor *View*

Created a California house price prediction model with data exploration, feature engineering, and model comparison, emphasizing Random Forest regression and optimized the model for an efficient ML pipeline.

</> Aerodynamic Mesh and Splining Generator

Developed aerodynamic mesh automation in MSC Patran, drastically **reducing** task completion time by **90%**. Utilized Python with Pandas, NumPy, and linear interpolation for seamless integration.

</> Efficient Flutter Analysis and Reporting Through Automation

Designed an automated **Python program** for streamlined flutter analysis, data extraction, and insights generation which **enhanced 70%** efficiency of the project. Generated professional reports using a custom LaTeX wrapper.

</> Gust Card Generator and Data Analysis

Developed a Python script to generate gust cards for every point within the flight envelope, conducted numerical analysis, and utilized a custom LaTeX tool for comprehensive report generation, **reducing 60%** of the manual work.

Skills

- Python
- TensorFlow
- Scikit Learn
- Machine Learning
- Algorithms & Data Structure
- Exploratory Data Analysis
- MATLAB
- Microsoft Azure AI
- Automation
- Feature Engineering
- LaTeX
- MS Office

Courses and Certificates

- **Machine Learning Specialization,** *Online Certificate Coursera* *View*
- **Microsoft Learn AI Skills Challenge**
- **Supervised Machine Learning: Regression and Classification,** *Online Certificate Coursera* *View*
- **Mathematics for Machine Learning: Multivariate Calculus,** *Online Certificate Coursera* *View*
- **Mathematics for Machine Learning: Linear Algebra,** *Online Certificate Coursera* *View*
- **Scientific Computing with Python,** *Online Certificate freeCodeCamp* *View*
- **AI For Everyone,** *Online Certificate Coursera* *View*
- **Microsoft Office Specialist: PowerPoint 2016** *View*
- **Microsoft Office Specialist: Word 2016** *View*