



# Muhammad Ali

Data Science | Data Analytics | Mater in Automation and IT

## Summary

Passionate data science student with a keen interest in data analysis and Machine Learning. Expert in building ML models and capable of providing data science solution with a skillset of programming and Engineering techniques.

## Professional Experience

### 1) Research Assistant as a Data Scientist (November 2023 to Present)

#### University of Applied Sciences cologne

- Projects based (Related to Automation and AI).
- Data collection and preparation by creating data pipelines.
- (ML,RL) Models Training, Transfer Learning.
- Buildings automation with AI to optimize energy consumption .
- Creation of digital twins and for the integration of sensor data from the field level into the digital twins.

### 2) NOC Engineer – Data Management (DBMS) (April 2022 to July 2022)

#### Associated with Huawei Company, Islamabad, Pakistan.

- Data cleaning and informative visualizations of trends & patterns.
- Oracle Database to store the data & Power BI for dashboard.
- Performing data-driven investigations on network incidents and outages to identify root causes and prevent future occurrences.

### 3) Trainee Engineer (July 2019 to Aug 2019)

#### Chashma Hydal Power Plant, Chashma, Pakistan.

- Collecting data from sensors and preprocessing
- Developing and maintaining databases to store and manage large volumes of sensor data to cloud.

### 4) Electrical Maintenance Engineer (Sept 2021 to Feb 2022)

#### Bureau of Geophysical Prospecting (BGP), Krachi, Pakistan.

- Electrical equipment's corrective and preventive maintenance along with equipment health monitoring and trending.
- Installation and integration of electrical devices.

## Projects

### 1) Time-Series Forecasting of Energy Data (Oct 2023 - Feb 2024)

#### Associated with Cologne University of Applied Sciences

- Time-series data analysis, visualization & preprocessing pipelines.
- Forecasting using Darts and TensorFlow, Transfer learning.

### 2) Data-Science-and-Visualization-Application (Sep 2022 - Feb 2023)

#### Associated with Cologne University of Applied Sciences

- Data analysis, smoothing, interpolation, and outlier recognition.
- Classification and regression using AI and ML techniques, providing users with powerful predictive capabilities.
- Graphical outputs using python language.

### 3) AI-Model-for-Prognosis-Prediction (Mar 2023 - May 2023)

#### Associated with Cologne University of Applied Sciences

- Efficient data preprocessing, feature engineering, feature selection, and Implementation of neural network architecture.
- Hyperparameter Optimization using the Optuna library.

## Personal Details

**Phone:** +4917697712721

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**Address:**

Cologne, Germany

**Date of Birth:**

December 13, 1999

**LinkedIn**

## Technical Skills

### Programming

- Python
- SQL
- C

### Visualization Tools

- Power BI
- Tableau
- Microsoft Excel

### Simulation Tools

- Simulink
- UniSim
- Power World
- Plant Simulator
- Innovator (BPMN)

### Version Control

- GitHub
- GitLab

### Languages

- English (Proficient)
- German (Basic)
- Urdu (Native)
- Punjabi (Native)

### Hobbies

- Reading
- Fitness
- Cycling

4) **ML-Model-for-Prognosis-Prediction** (Mar 2023 - May 2023)

**Associated with Cologne University of Applied Sciences**

- RF model training for prognosis prediction in patients.
- Feature engineering to enhance model performance.
- Hyperparameter tuning with spotpython library.
- k-fold cross-validation to avoid overfitting.

4) **Object-Detection-With-YoloV8-model** (Sept 2023 - Oct 2023)

**Associated with Cologne University of Applied Sciences**

- Objects detection on real time basis to control the racing car based on detected sign boards.
- Data collection, labelling, and model training on custom dataset.
- Image detection using OAK camera as an edge device to deploy the model and data pipeline created by depthai.

5) **Reinforcement learning for seesaw** (Oct 2023 – Feb 2024)

**Associated with Cologne University of Applied Sciences**

- Preparing a reinforcement learning model to balance a ball in centre of rod on seesaw, the model will automatically learn from experiments without giving a labelled dataset. Punishment and rewards on each action taken.
- Image detection using yoloV8 model.
- And RL model to predict next action.
- PLCnext to control the angle of rod to control the moment of ball.

6) **Home automation with Mobile Application** (April 2020 - May 2020)

**Associated with Riphah International University**

- Developed a comprehensive home automation system with a mobile app using IOT devices, MQTT protocol for communication.
- Mobile app used to control various home devices and systems remotely.

## Education

**Master in Automation & IT** | CGPA 1.9 (October 2022 – Present)

**Technical University of Applied Sciences, Köln, Germany**

- **Courses:** Energy Data analysis and Forecasting, ML and Deep Learning algorithms, Relational Databases (SQL), IIOT, ERP, MES systems, Data-Driven Modelling and Model optimization, Control Systems.

**BS Electrical Engineering** | CGPA 1.2 (Sept 2017 to Aug 2021)

**Riphah International University, Islamabad, Pakistan**

- **Courses:** Object Oriented Programming, C++, Electronic Devices & Circuit Analysis, IT Telecommunication, Microcontrollers, Power Systems, Power Electronics.

## Certificates

- Learning Data Analytics: 1 Foundations
- Excel Data Analysis: Forecasting
- Power BI: Dashboards for Beginners
- Power BI Essential Training
- Designing Highly Scalable SQL DB
- SQL for Data Analysis