Muhammad ALi

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Professional Experience

July 2024 – today

Forschungszentrum Jülich

Student Assistant

- Automate and improve the livability of residential buildings.
- Data analysis and Development of a cloud-based ML algorithm.
- Databases, Machine learning and Cloud computing.

November 2023 – today

Technical University of Applied Sciences, Cologne, Germany

Research Assistant as a Data Scientist

- AI-driven solutions to optimize energy consumption
- Data pipelines for efficient data collection and preparation
- ML and RL models, leveraging transfer learning for enhanced accuracy

April 2022 – July 2022

Andromeda, Islamabad, Pakistan

Data Analyst

- Cleaned and prepared data for analysis
- Created informative visualizations to identify trends and patterns
- Utilized Oracle Database for data storage and Power BI for dashboards

September 2021 – February 2022

Bureau of Geophysical Prospecting (BGP), Krachi, Pakistan

Internship

- Analysis of complex datasets to provide actionable insights
- Driving key business decisions and strategies
- SQL queries to extract, manipulate, and analyze large volumes of data
- Interactive & visually appealing dashboards using Tableau and Power BI
- Designed and implemented predictive models to forecast trends

July 2019 – August 2019

Chashma Hydal Power Plant, Chashma, Pakistan

Internship Trainee

- Data preprocessing techniques
- Data analysis for time series data
- Informative visualizations to identify trends and patterns in data
- Developed and validated predictive models for future forecasting

Education

October 2022 – Present

Master in Automation & IT | CGPA1.8
Technical University of Applied Sciences, Cologne, Germany
Relevant coursework:

- Statistical Machine Learning and Deep Learning Algorithms
- Data-Driven Modelling and Model Optimization
- Energy Data Analysis and Forecasting
- Relational Databases
- Industrial Internet of Things (IIoT)

Knowledge and Skills

Technical skills

- Python, R, & C
- Machine Learning: TensorFlow, Keras, Sci-kit-learn, PyTorch, XGBoost , Pandas, NumPy, Seaborn, Matplotlib, SQL, MySQL, Git
- Data analysis, Time series trends and pattern analysis and forecast
- Databases, relational databases
- Data pipelines, data cleaning, data preprocessing
- Anomaly detection, handling missing data, interpolation
- Cloud Platforms: AWS, Azure
- Communication protocols (OPCUA, MQTT, Mode-bus, Profinet)
- Microsoft Office (Power BI, Tableau, Excel, PowerPoint)

Languages

English very good in spoken and written
German good in listening and writing
Mother tongues: Urdu, Hindi and Punjabi

Certificates

- Data Analysis and Visualization
- Applied Machine learning in python
- Power BI: Integrating AI and Machine Learning
- Designing Highly Scalable SQL DB
- SQL for Data Analysis
- Time-series Data Analysis and Forecasting

Projects

November 2023 – July 2024 **Energy Optimization with reinforcement learning agents**

- Interacting with gym environment of buildings to optimize the temperature set-point.
- Training the RL agent in simulation and test on real-world applications.
- Communication protocols for interaction between model and buildings
- Modelica and Matlab simulations.
- Image Processing with Yolo Models.
- Docker images and containers.

Oct 2023 – Feb 2024 **Time-Series Forecasting of Energy Optimization**

- Multivariate Time-series data analysis, and preprocessing pipelines.
- Trends, seasonality, and patterns in data and visualizing.
- Anomaly detection, interpolation, and data smoothening.
- Model optimization, time series energy data forecast.
- Transformers

Oct 2023 – Feb 2024 **Virtual steering for autonomous cars**

- Image processing with Yolo models.
- Data collection and labelling
- Improving control of autonomous car steering

Oct 2023 - Feb 2024 **Multi-agent frameworks & Large language models.**

- Chat-bots
- Artificial Intelligence, Digital Innovations.

Mar 2023 - May 2023 **ML Model for Prognosis Prediction**

- Data preprocessing, feature engineering, feature selection, and
- Implementation of neural network architecture.
- Hyper-parameter Optimization, cross-validation.

Sept 2022 – Feb 2023 **Data Science and Visualization Application**

- Development of user-friendly website for forecasting of energy data.
- Data smoothing, interpolation, and outlier recognition.
- AI and ML techniques, powerful predictive capabilities.
- Data visualization webpage for analysis and presentation of results.