



# ASHISH SAINI

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## PROFILE SUMMARY

Data Science and Machine Learning graduate student with 5 years of applied data science, ML, and building data-intensive application experience. I have advanced knowledge of software design patterns and am particularly strong in Python, with a solid foundation in object-oriented and functional programming and technical writing. I excel at applying AI/ML theory to commercial development in high-volume data processing, visualization, and model development. My strong communication and teamwork skills allow me to collaborate effectively within cross-functional teams.

## SKILLS

**Languages:** Python, R, SQL, C/C++, PySpark  
**Cloud/DevOps:** Azure, GCP, Databricks, Docker, Git(CI/CD), MS Office  
**Database:** MySQL, BigQuery, MongoDB, BigQuery, NoSQL  
**BI/ETL Tools:** Power BI, Azure Data Factory, Airflow, Dataiku  
**Frameworks:** PyTorch, TensorFlow, MLflow, Flask, HuggingFace, Langchain, Scikit-Learn, NLTK, FastAPI

## WORK EXPERIENCE

### Munich RE

June 2024 – Feb 2025

#### Data Management and Automation Intern

Munich, Germany

- Transformed and interpreted **structured and unstructured data** for actuarial analysis, leading to more informed and **data-driven** decision-making processes.
- Ensured **accurate** and **comprehensive** data collection for client data pools, directly contributing to the precision of **analysis** and **reporting**.
- Actively collaborating in **automating** the data preparation process, **streamlining workflows**, and enhancing overall productivity.

### Munich RE

May 2023 – April 2024

#### Data Analyst Intern

Munich, Germany

- Contributed to developing an in-house **Python-ML** codebase deployed in **Azure** by adding **PySpark** capabilities. Utilized in **30+** projects company-wide, significantly increasing the adoption of packages within **Databricks**.
- Proposed and integrated the **LightGBM** algorithm for churn prediction in insurance policies, achieving a **precision of 0.75**.
- Developed and optimized functions to streamline **hyperparameter tuning**, resulting in a **30%** reduction in model selection time and facilitating the identification of the most **effective ML models**.
- Led the update of internal **Python package dependencies**, ensuring stability by providing a comprehensive **test suite** and **documentation** for easy onboarding of new users.

### Technische Universität Dortmund

March 2022 – April 2023

#### Research Assistant

Dortmund, Germany

- Developed **trustworthy AI** models and applied unsupervised **anomaly detection** techniques to **re-identify** pallet blocks accurately.
- Constructed an **anomaly detection model** using **Auto-encoder** architecture with **SSIM** loss in **TensorFlow**, achieving a **20%** improvement in detection accuracy.
- Proposed and integrated a **high-confidence** object detection model to accurately identify **logistic objects** such as pallets, stillages, and forklifts.

### Celebal Technologies

September 2018 – June 2020

#### Consultant Data Scientist

Jaipur, India

- Led** client consultations, transforming complex datasets into **actionable strategies**, culminating in a **70%** increase in customer satisfaction.
- Developed an automated tool using **Python**, **Computer Vision**, and **NLP** to streamline **invoice processing** and **car damage** assessment processes.
- Built **classical** and **deep learning** algorithms to drive business development, productivity, process improvement, and marketing strategies, including **HR process**, **retail**, **finance**, etc.
- Designed and executed **ETL** pipelines and created **Power BI** dashboards for enhanced **monitoring** and **reporting**.

## EDUCATION

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Technische Universität Dortmund

*M.Sc. in Data Science*

November 2020 – Present

*Dortmund, Germany*

Maharishi Arvind Institute of Technology

*BE in Computer Science*

August 2013 – September 2017

*Jaipur, India*

## RELEVANT PROJECTS

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### Insurance Analytic Platform (IAP)

Munich RE

- Developed an in-house **Python** library, facilitating the seamless development of **ML models** on **Databricks** using **PySpark** capabilities.
- Integrated optimized functions for **hyper-parameter** tuning, ensuring model performance by improving **accuracy** and **reducing** training time.
- Configured the **deployment** process using a **YAML** file on **Azure DevOps**, facilitating seamless use for end-users.

### Enhancing uncertainty estimation and outlier detection Link

Master's Thesis

- Implemented **Uncertainty estimation**, **outlier exposor**, and **decomposed confidence** architecture for detecting unseen **outliers**, enhancing the **reliability** and **trustworthiness** of deep neural networks.
- Evaluated the model performance by using **Expected calibration errors** (ECE) and analyzed model complexity on the **DomainNet** dataset.
- Demonstrated a **20%** reduction in **Soft-binned** expected calibration error (SB-ECE) using **decomposed confidence** architecture, further supporting the effectiveness of the applied techniques.

### Anomaly detection on Time Series Data

TU Dortmund

- Aimed to predict **anomalies** in energy consumption data for TU Dortmund, enhancing predictive maintenance and resource **optimization**.
- Implemented a **Deep Generative Hierarchical Latent Factor** (DGH-LF) algorithm, leveraging **Markov Chain Monte Carlo** (MCMC) methods to detect **anomalies** in time series energy consumption data.
- **Detected** and **flagged** anomalies in **40%** of energy consumption data, enabling proactive **identification** of issues and potential savings.

### Employee Attrition Prediction

Celebal

- Developed an **ML model** to improve the retention rate of valuable employees in an organization, thereby minimizing the **employee turnover** cost of the company.
- Analyzed employee data to identify **patterns** and **key indicators** of attrition, leading to the development of a **ML model** with over **85%** accuracy in predicting employee **turnover**.
- The insights and forecasts derived from the model directly supported **retention strategies**, leading to a **30%** reduction in turnover rates.

### Quality of Hire

Celebal

- Developed an intelligent system to analyze **candidates' personal** information and predict their **performance** before formal evaluation.
- Designed and implemented an **ensemble** architecture combining various machine learning models, integrating **multiple** employee work history attributes, and visualizing results through **Power BI** dashboards.
- Utilized by **HR** teams within the organization, enabling **data-driven** decisions.

## LANGUAGES

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**German:** B2 (Upper-Intermediate )

**English:** C1 (Fluent)

**Hindi:** C2 (Native)