

# Adnan Karol

Data Scientist at SURU-Part of LIXIL

+49-15171684018

adnanmushtaq5@gmail.com

in /adnan-karol

/adnankarol

/adnan-karol

## Experience

### Data Scientist

SURU-Part of LIXIL

Aug. 2021 – Present

Düsseldorf, Germany

- > **Project: Case-Validation:** This project uses **machine learning** to identify houses with anomalies, assisting the Prevention team in preventing water damage. #AnomalyDetection
- > **Project: Pressure Algo 2.0:** A project aimed at enhancing the way the **SenseGuard device** performs pressure measurements. Enhanced the models for scheduling pressure measurements and leakage detection. #SensorData #LeakageDetection
- > **Project: GOD (Guage of Drops):** A project that uses **deep learning** to detect homes with micro-leakage and has a development testing accuracy of **96%**. As a result, the Prevention Team's leak detection business will generate revenue more quickly. This **patent-pending** project is deployed using **AWS Redshift, Lambda, ETL Jobs**, and **S3**. #MicroLeakage #AWS
- > **Project: ICAS (Image Capture Assistance System):** A project that requests users to contribute higher-quality pipe system images as part of the registration process. The Sales team will benefit from this by preventing any delays in the device installation procedure. Additionally, I helped the cloud team deploy the project using **Amazon S3, Lambda**, and **ETL Jobs**, which works in real-time. The project effectively minimizes the frequency of requests from the operations team for customers to re-upload images, achieving a notable reduction of over **50%**.
- > **Project: MLOPS for ICAS:** Created the architecture and set up the pipeline for automatic monthly model re-training of the ICAS model to be stable, reliable, and robust, using the data collected from customers. #MLOps #ModelRetraining #DataCollection
- > **Project: Data Extraction Tools:** Created tools to fetch data from the data lakes. With the help of these tools, the sales and after-sales teams can quickly speed up procedures and pull relevant information from the **AWS big data cloud**. #DataLakes
- > Conducted a **statistical analysis** of insurance portfolios and performed a suitability analysis for collaboration. Assisted management and business leaders in assessing the viability and profitability of potential collaborations with insurance companies. #InsurancePortfolios
- > Engineered **Tableau dashboards** to elevate business intelligence within the company, enabling customer service teams to directly support and diagnose customer issues, while also providing valuable assistance during firmware updates and similar tasks. Cleaned Tableau space, eradicated unused dashboards, and optimized queries to make existing dashboards **4x faster** 🚀. #BusinessIntelligence
- > Presented **data insights** to customers, showcasing the actionable findings and facilitating informed decision-making.

### Data Science Intern

Vialytics GmbH

Jul. 2020 – Mar. 2021

Stuttgart, Germany

- > Trained a **road damage object detector** using **YOLOv4** on **Oracle Cloud**, utilizing **image data**.
- > Implemented the assessment of **road unevenness** by leveraging **non-visual smartphone sensors**, specifically the **accelerometer data**. This technology is actively employed by the company. #SensorDataAnalysis #RoadConditionAssessment
- > Conducted **fault and anomaly analysis** to detect and rectify **outliers** within a specific category of damages. #AnomalyDetection

## Education

### University of Stuttgart

Master of Science Information Technology

Oct. 2018 – May 2021

Stuttgart, Germany


- **Master Thesis:** Implemented feature extraction techniques and applied both machine learning and deep learning algorithms to analyze EEG and ECG signals, aiming to discern the most effective approach between machine learning and deep learning methodologies in physiological signal analysis. #SignalProcessing #MachineLearning #DeepLearning #FeatureExtraction

## Patents, Publications, Projects


### GOD: System and method for detecting leakages in a fluid-bearing structure

- A project that uses deep learning to detect homes with micro-leakage and has a development testing accuracy of 96%. Currently, this project is filed with the patent office.

### Water Demand Forecasting and Deployment using Docker and Flask.

- Developed a comprehensive end-to-end system for forecasting water consumption, encompassing data preprocessing, model construction utilizing CNN-LSTM, and model deployment through Docker and Flask. 

### LSTM and CNN Based IMU Sensor Fusion Approach for Human Pose Identification.

- Springer, International Symposium on Wearable Robotics, WeRob 2020: Wearable Robotics: Challenges and Trends. 

## Skills

**Programming** Python

**ML Libraries** Tensorflow, Keras, OpenCV, Pandas, Scikit-learn, Numpy, Scipy, Matplotlib

**Cloud** AWS Cloud (Athena, S3, EC2, Redshift, SageMaker, Lambda, SNS, ETL, Eventbridge, IAM), Oracle Cloud

**Databases** Redshift, MongoDB, MySQL, SQLite, InfluxDB

**Business Intelligence** Tableau, Quicksight

**Embedded Hardware** Raspberry Pi, Nvidia Jetson Nano, Arduino, ESP32, IMU, EMG sensors

**Automation** Jenkins, Docker, MLOPS, GitHub Actions

**Others** Git, Agile, Confluence, JIRA, Scrum

**Language** English (Fluent), German (Elementary)

## Certifications

