

# Hassan Rehman

AI ENGINEER - PYTHON DEVELOPER - MLOPS

Lahore, Pakistan

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## Summary

As an accomplished AI Engineer, I possess a solid track record of five years in the field, specializing in computer vision, deep learning, predictive modeling, data wrangling, architecture design, and Python backend programming. My primary objective is to deliver exceptional quality work to clients while driving innovation within the field. With a firm commitment to working diligently and adhering to ethical practices, I strive to achieve optimal results by leveraging smart and efficient methodologies.

## Work Experience

### Nextbridge Pvt Ltd.

Lahore, Pakistan

LEAD AI ENGINEER

Jan. 2019 - Present

- Team management.
- Research on current on going technologies.
- Architectural level designing of projects for better software development.
- Handling of ML-Ops and Dev-Ops. Designing of better cloud architecture that suits the best with the requirement.
- Gather the requirement from client and provide the tentative time estimate.
- Develop, fine tune, train and validate the machine learning models based on the data and analysis.
- Rapid prototyping of client ideas to give them better picture of what we can do for them.
- Making of timelines and feasibility reports of project.
- Handles the back-end API's to integrate the machine learning model.
- Involved in recruiting and training of new resources. Provides the road map for them to be trained over their training period.

### Nextbridge Pvt Ltd.

Lahore, Pakistan

DATA SCIENCE INTERN

Oct. 2018 - Jan. 2019

- Got training of machine learning and deep learning models.
- Got training of data wrangling and pre-processing techniques.
- Got training of software development technique.
- Involved in development of in-house projects.
- Delivered successfully the prototypes based on machine learning.

## Education

### FAST NUCES.

Lahore, Pakistan

MS IN DATA SCIENCE

2021 - 2023

- Got 3.2 CGPA
- Did my thesis in "Segmentation and identification of tooth decay from bitewing dental X Rays".

### The Islamia University

Bahawalpur, Pakistan

B.S. IN COMPUTER SCIENCE

2014 - 2018

- Got 3.68 CGPA.

## Skills

### Machine Learning

Keras, Tensorflow, Pytorch, OpenCV, Spacy, Dialogflow, RASA, Pandas, PySpark, Huggingface, NLTK and Scikit

### Back-end

Python, C++, Flask, Django, DjangoORM, DjangoORM, REST API, Docker, Android, DynamoDB, SQLite and MongoDB

### Scrapping Tools

BeautifulSoup, Selenium and Scrappy

### Front-end

HTML, CSS, Bootstrap and Javascript

### Cloud Services

AWS EC2, AWS Lambda, AWS ECS, AWS SageMaker, AWS ECR, AWS S3 and GCP Data Proc

### Deployment

GCP, AWS, Heroku, Nginx and Apache

### Soft Skills

Negotiation, presentation, logical thinking, story telling, research, mentoring, selling skills, willingness to accept feedback and understanding body language.

## Aprevo XR Angle Calculator

PROJECT DEALS IN XRAY IMAGES OF PATIENT.

- Collects and annotates the data set of X Rays.
- Used YOLOV8-Pose for this problem.
- Calculates the Lumbar Lordosis and Scoliosis from XRay images.
- The API accepts images in form of DICOM, PNG, and JPEG .
- Used AWS lambda to deploy the code and attached API Gateway for endpoint

## Aprevo Digital Segmentation

PROJECT THAT DEALS IN CT SCAN USING AI.

- Design cloud architecture and developed backend + DL Pipelines.
- Segmentation of the vertebral bodies (lumbar + sacrum) from CT scan.
- Performed instance segmentation.
- 96 percent of dice score has been achieved till now. Can segment specific bony anatomy.
- 3D landmarking was done for adjustment.
- Performed 510(k) testing on data based on different ethnicity, race, and age.
- IOU score and Hausdorff distance are used as evaluation metrics.
- Made deep learning pipelines. Deployed pipeline on AWS Sage Maker via AWS ECR.Used AWS Lambda for triggering

## Divorce Chatbot

LEAD THE PROJECT AND HANDLES MLOPS.

- Fine Tuned LLaMA model on our customized dataset.
- Chatbot was able to talk in a more friendly way.
- The dataset was designed in such a way to cater to divorce needs in the California region.
- Model was then quantized for production purposes.
- Chatbot let the user know, how he/she can file for divorce and also give suggestion for a better life.

## Telsmart

VOIP-BASED PRODUCT.

- Created microservices to handle loads of data of the person and their contacts.
- Designed a pipeline that validates the phone numbers based on their location.
- Combined ECS, Lambda and S3 to make a pipeline. The Django app was uploaded on ECS.
- Handle exceptions and provide feedback to change.

## AggDrone

IT CONVERTS 2D IMAGES OF DRONE TO 3D TERRAIN.

- Designed software architecture.Developed backend + Computer Vision Pipelines.
- It converts 2D drone images to 3D models.The goal is achieved by computer vision and photogrammetry techniques.
- Purpose of the project is to calculate the volume of terrain at different positions.
- Developed in Python using Django and deployed on GCP
- Developed a tool in Three JS for calculation of volume.

## Sentry View

DESKTOP APPLICATION FOR ONE POINT IP CAMERA ACCESS

- The system is developed for the monitoring and dispatch team.
- It's a desktop application made using Python EEL-framework combined with React.
- The backend is designed using the Python Django framework for a centralized system.
- Develop an email server to configure with NVRs and DVRs for real-time notifications.
- Reverse engineer the NVRs and DVRs to change and manipulate the system options.

## Mining site surveillance

IOT BASED PROJECT. [WWW.MYJOBSITESENTRY.COM]

- The system is developed for monitoring of mining sites using Flask.
- The system itself developed on Nvidia Xavier which is connected to real time IP cameras.
- Model trained on Yolo v4 for human, vehicle and motion recognition.
- Can differentiate between mining site worker and normal person.

## Hurry Park

AN AUTOMATED NUMBER PLATE DETECTION

- Developed in C++ and android using OpenCV.
- Model is designed for number plate detection using YoloV4.
- .so file is generated so that it can be run anywhere.

## Coin Crypto

FORECASTING OF CRYPTO COINS. [FREELANCE PROJECT]

- It provides useful insights into cryptocurrency.
- It provides a prediction of currency based on its past data.
- It provides information on bearish and bullish market
- The real-time data is fetched from Coin Gecko and it is developed in Flask

## **Ikra App**

FUZZY PHONETIC SEARCH FOR ARABIC MANUSCRIPT. [WWW.IKRA.COM.PK]

- Used phonetic search algorithm and distance technique for information retrieval.
- Retrieve record by voice or roman Arabic.
- App is available on web, android and IOS. Web backend is designed in Flask.
- 10K+ downloads with 4.5 rating on Google Play Store.

## **Publications**

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### **2D UNET SEGMENTATION OF MITOCHONDRIA FROM ELECTRON MICROSCOPY IMAGES**

HAFIZ HASSAN REHMAN AND MOHSIN REHMAN, "2D UNET SEGMENTATION OF MITOCHONDRIA OF ELECTRON MICROSCOPY IMAGES," IN INTERNATIONAL RESEARCH JOURNAL OF MODERNIZATION IN ENGINEERING TECHNOLOGY AND SCIENCE, VOL. 4, PP. 1000-1007, SEPT 2022, DOI: 10.56726/IRJMETS29962.

- DOI: [www.doi.org/10.56726/IRJMETS29962](https://www.doi.org/10.56726/IRJMETS29962)
- Code: [www.github.com/HassanRehman11/mitochondria\\_segmentation](https://www.github.com/HassanRehman11/mitochondria_segmentation)

## **Certifications**

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### **Modernizing Data Lakes and Data Warehouses with GCP**

COURSERA

- [www.coursera.org/verify/2CVWQDCG9MDB](https://www.coursera.org/verify/2CVWQDCG9MDB)

### **Google Cloud Platform Big Data and Machine Learning Fundamentals**

COURSERA

- [www.coursera.org/verify/MGFRRPAJSZXV](https://www.coursera.org/verify/MGFRRPAJSZXV)

### **Corporate Communication Skills**

NEXTBRIDGE INSTITUTE

- [www.nextbridgeinstitute.com/certificate?cid=602e4d86f0265](https://www.nextbridgeinstitute.com/certificate?cid=602e4d86f0265)