Muhammad Usama

COMPUTER ENGINEER

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https://github.com/usama-x930 Pakistan Attock, Punjab

PERSONAL STATEMENT

I am a motivated Computer Engineering graduate student with interest in Deep learning and Computer Vision. I have good analytical skills coupled with problem solving expertise and creative & research oriented approach. I have completed projects involving development of robust AI models and deploying them for end-to-end applications.

EDUCATION

COMSATS University Islamabad **Attock Campus**

Bachelor of Science in Computer Engineering *2017 – 2021*

- CGPA: 3.77/4

Fazaia Degree College **ARF Kamra**

HSSC - Pre-Engineering *2015 – 2017*

- Grade: 78%

Fazaia Degree College **ARF Kamra**

SSC - Computer Science *2013 – 2015*

- Grade: 92%

EXPERIENCE

Data Point (Private) Limited **Islamabad**

Senior Deep Learning Engineer *Oct 2021 – Ongoing*

- Working on Pavement Crack detection which recognizes various types of road cracks - A project by National Highway Authority (NHA), Pakistan
- Collection and annotation of road crack images using drones
- Training different deep learning based object detection models
- Intelligent surveying solutions for construction industry
- Integrating trained model in a website and marking the detection cracks coordinates on the google map

Medisure Health Services Ltd

Deep Learning Intern *Oct 2021 – Jan 2022*

- Assisted in development of the low back pain classification system
- Used different Machine learning algorithms for classification

PROJECTS

Automatic toll tax calculation with vehicle type and license plate recognition system using deep learning *2020 – 2021*

Final Year project

- Development of robust automatic toll tax calculation using vehicle type and license plate recognition that can be deployed on the toll plaza
- Collection and annotation of diverse novel dataset whcih consists of Truck, Bus, Van, Suzuki/carry and Cars. This is the most diverse dataset in Pakistan for vehicle type and license plate recognition
- Training various state-of-the-art deep learning based object detection models
- Dashboard development using PyQT and Streamlit library to show the real-time working
- Explored AI on edge device and deploying models on Raspberry Pi and camera interfacing for real-time working

Deep Learning Framework for Facial Expression Recognition - Github

Semester Project – Neural Networks *2021*

- Aims to classify seven emotion classes, including anger, disgust, fear, happiness, sadness, surprise, and calm through a deep neural architecture

- Implemented Inceptionv3 and ResNet models using Tensorflow and fine-tune them on FER2013 dataset
- Implemented face detection with Haar Cascade and applying inference using trained models for expression recognition
- Tools – Python, Tensorflow, Numpy, OpenCV, Jupyter Lab, Google Collab

Motion detection and tracking using Image processing - Github
Semester Project – Digital Image Processing *2021*

- Realtime movement detection and tracking using image processing techniques
- Only saves the motion detected frames, helps to save storage space
- Tools – Python, Numpy, OpenCV, Jupyter Lab

Health monitoring system for Cardiac patients *2020*
Semester Project - Embedded System Workshop

- Embedded system and IoT based solution for continuous and non-invasive measuring of cardiac patient and health monitoring system
- Monitor ECG, Pulse, Temperatures and web based remote access
- Generates and forwards alarm messages to the relevant caretakers
- Tools – Arduino, AD8232 ECG Sensor & ESP8266 with ECG Graph

AWARDS, GRANTS & HONOURS

Campus Gold Medalist *2021*
Ignite Final Year Project Funding *2021*
Merit based full fee scholarship . . . . . *2017 - 2021*

TECHNICAL SKILLS

LANGUAGES: Python, Matlab, C, C++, Verilog HDL, MySQL, LaTeX

DEVELOPER TOOLS: Linux, Jupyter Lab, Pycharm, VS Code, Xilinx ISE Design Suite, Arduino IDE, LabView, Proteus

FRAMEWORK: TensorFlow, OpenCV, Streamlit, PyQT, Tensorflow object detection API, Scikit-learn, NumPy, Pandas, Matplotlib, Seaborn

HARDWARE TOOLS: Raspberry pi, Arduino, ESP8266

PUBLICATIONS

Vehicle and License Plate Recognition With Novel Dataset For Toll Collection - Preprint , Github
IEEE Transaction on Intelligent Transportation System *Feb, 2022*

- Status: Under Review

ADDITIONAL COURSES AND CERTIFICATIONS

Crash Course on Python
– Coursera – Offered by Google
Deep learning specialization
– Coursera – deeplearning.ai
The Raspberry Pi Platform and Python Programming for the Raspberry Pi
– Coursera – Offered by University of California
Ultimate Python Bootcamp for Data Science & Machine Learning
– Udemy

REFERENCES

Dr. Hafeez Anwar
Assistant Professor *COMSATS University Islamabad, Attock Campus*
hafeez.anwar@cuiatk.edu.pk
Dr. Shujaat Tanoli
Assistant Professor *COMSATS University Islamabad, Attock Campus*
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