





ZIA UR REHMAN

Computer Engineer | Computer Vision | Machine Learning | Deep Learning | Embedded Systems

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 [LinkedIn Profile](#)
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SKILLS

Computer Languages

- Python, C, C++, Embedded C, Matlab, Latex (for academic writings), Verilog (HDL), Streamlit, LangChain

Development Environment

- VS Code, PyCharm, Anaconda, GitHub, Google Colab, Kaggle, Raspberry pi, Ubuntu, Matlab, Proteus, Arduino IDE, MikroC for PIC Microcontrollers, MPLAB, PICKit-3, Xilinx, Vivado, FPGA (Artix-7), Atmel Studio, Microsoft Visio, Streamlit, Overleaf

Operating Systems

- Windows, Linux (Ubuntu), Raspbian OS

RESEARCH INTEREST

- Computer Vision
- AI (Machine Learning/Deep Learning)
- Embedded Systems
- Robotics

EDUCATION

- Bachelors in Computer Engineering
2014 – 2018

University of Engineering and Technology (UET), Taxila, Pakistan.
Institute: KICSIT, Rawalpindi
CGPA: 3.77 / 4.0 (Rank 1 in class)

- Masters in Computer Science
2022 – in progress

Institute of Space Technology, Islamabad
CGPA: 4.0 / 4.0 (Rank 1 in class)

CERTIFICATIONS

- Python for Machine Learning ([link](#))
- Face Detection with OpenCV in Python ([link](#))
- Git Crash Course ([link](#))
- Image Classification with CNNs Using Keras ([link](#))

ACHIEVEMENTS

- Gold Medal in BS Computer Engineering
- First division throughout academic carrier.

EXPERIENCE

IST | Lab Engineer | Islamabad, Pakistan

16th July, 2019 to Present

AI Computer Vision Projects

(highlighted text are the hyperlinks)

- [American Sign Language](#) Recognition (OpenCV, TensorFlow Keras)
- [Face Detection](#) Using Mediapipe Accuracy up to 99%
- [Object Detection](#) Software (OpenCV, YOLOV5)
- [Control Servo Motor Using Hand Gestures](#) (Robo Vision, OpenCV, Arduino)
- [AI Gym Trainer](#) | Curl Counter (OpenCV)
- [Hand Distance Measurement](#) Using Computer Vision
- [3D Brain Model Control](#) By Hand Gestures
- [Vehicle Counting](#) from Traffic Monitoring Camera
- [Contours Detection](#) | Object Detection
- [Text Detection](#) and recognition
- [Car Parking Management](#) Using OpenCV from Parking Camera
- [Finding the width and height](#) of an object using aruco library
- [QR Code Scanner](#) Using OpenCV
- [Breast Cancer Predictor Web Application Using Streamlit based upon Machine Learning Algorithm](#) ([link](#))

Conduct the Labs in university, which include the following Subjects

- Digital Image Processing, Microcontroller Application & Design, System Programming, Computer Vision, Machine Learning, Digital System Design, Circuit Analysis, Digital Logic Design, Microprocessor

[MPI](#) (Message Passing Interface) Using Python for Parallel Programming
Implementation of Machine Learning Algorithms ([link](#))
Implementation of OS Scheduling Algorithms ([link](#))

VISION INSIGHTA | Consultant | Rawalpindi, Pakistan

17th Jan, 2023 to 1st Dec, 2023

Industrial Projects (Computer Vision)

- Development of IDU (Interactive Display Unit) for Stalls to automatically detect human being and starts the demo. User can also control the demo using hand gestures. (Raspberry Pi, OpenCV)
- Development of IPC (Interactive Presentation Control) to control the Power Point Presentation using hand gestures for conference hall. (OpenCV)
- Development of Virtual Whiteboard for conference hall to draw or write using hand gestures. (OpenCV)
- Gestures Control Robotic Car.

BARQI LABS | Embedded Design Engineer | Rawalpindi, Pakistan

25th Aug, 2018 to 12th Dec, 2018

Industrial Projects (Embedded Systems)

- Project with Fauji Fertilizer Company** Sadiqabad:
Design and Automate Score Board, Badminton court using PIC microcontroller, IR transmitter and receiver and seven Segments

KSOFT | Internee | Islamabad, Pakistan

13th July, 2016 to 24th Aug, 2016

Projects (Embedded Systems)

- Hardware Interfacing of Pathology Lab Machine**

Final Year Project (Under Graduate)

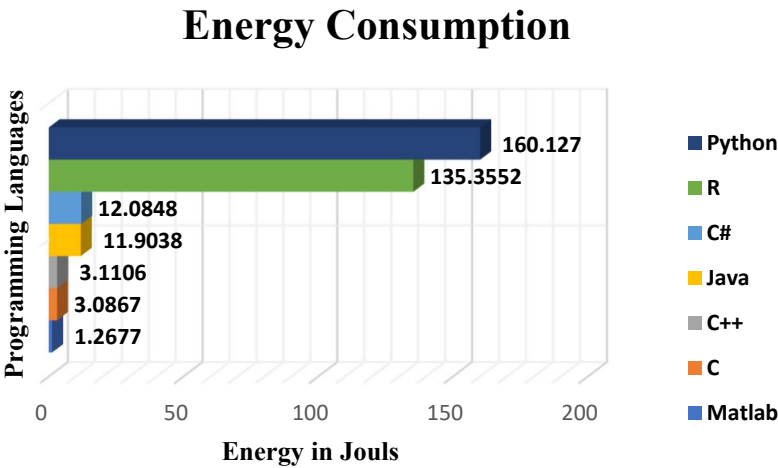
Electroencephalograph Based Wheel Chair (Mind Control Wheelchair).

RESEARCH EXPERIENCE

Finding Energy Consumption of Programming Languages (Research Project)

Comparative Analysis of Seven Programming Languages (C, C++, C#, Java, Python, Matlab, R)

I have performed the analysis of seven programming languages and model their energy consumption. Python turns to be most expensive in terms of energy consumption. The source code is published on GitHub. ([link](#))



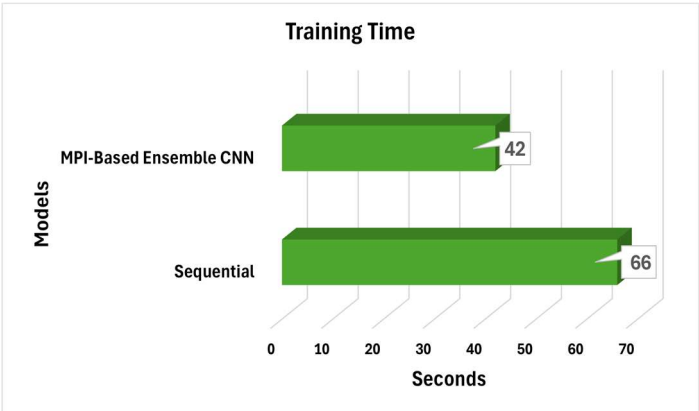
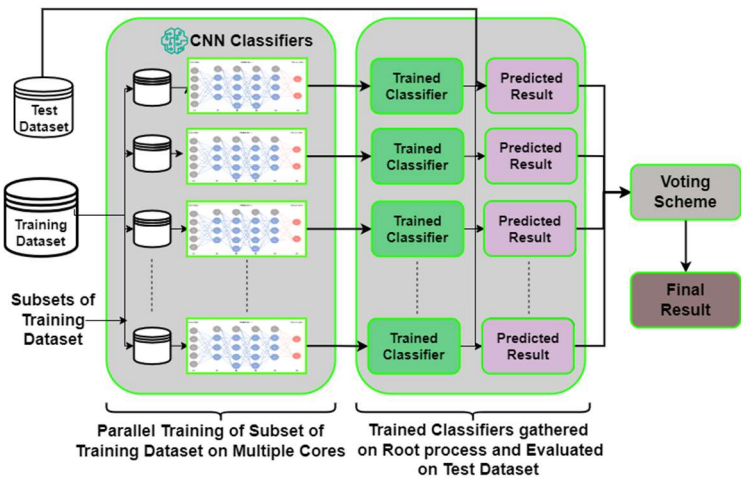
CADE 2024 Conference Paper (Accepted)

I have submitted the conference paper in CADE 2024 with the topic “Improving CNN Model Training Time Efficiency using MPI-Driven Parallelization and Ensemble Learning.” The source code is available online on GitHub. ([Link](#))

Supervised by Dr. Saif Ul Islam (WMG, The University of Warwick, Coventry, UK)

In this research we propose a novel approach that reduces CNN training time by 36% using MPI (Message Passing Interface) parallelization and ensemble learning on MNIST dataset.

Proposed MPI-driven Model



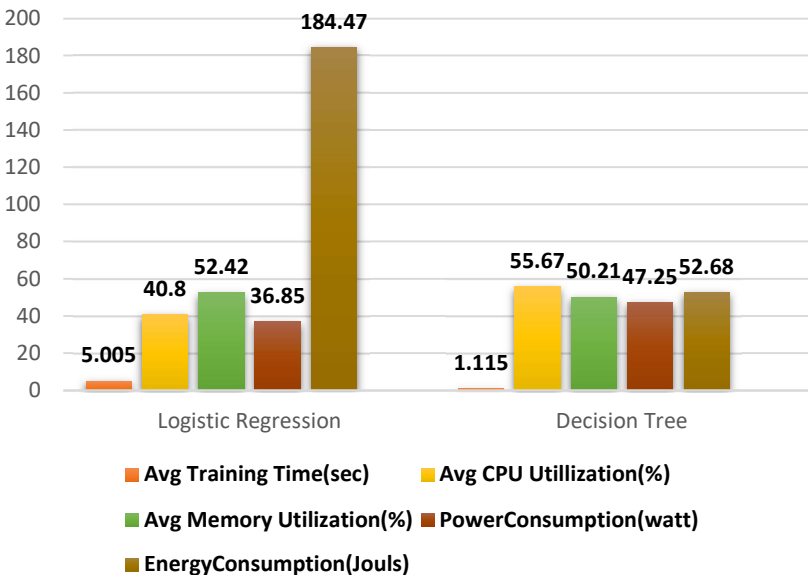
CADE 2024 Conference Paper (Accepted)

I have worked as a second author for the conference paper in CADE 2024 with the topic “Towards Green and sustainable Artificial Intelligence: Quantifying the Energy Footprints of Logistic Regression and Decision Tree Algorithms”

Supervised by Dr. Saif Ul Islam (WMG, The University of Warwick, Coventry, UK)

This research aims to address the need to quantify the energy footprint of machine learning algorithms to pave the way towards green and sustainable AI. We conducted an experimental study on the energy consumption of two state-of-the-art machine learning algorithms, logistic regression and decision tree while applying them to a popular benchmark Iris dataset. The energy consumption is quantified and compared through careful measurement and analysis.

Comparative analysis of decision tree and logistic regression on the basis of Energy Consumption



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Speaker in Industrial Workshops

Speaker in

Workshop Title: “A HANDS-ON WORKSHOP ON ARTIFICIAL INTELLIGENCE (AI) AND IMPLEMENTATION STRATEGIES”

Date: 06-07 December 2023

Organized at: Institute of Space Technology, Islamabad (IST)

Certificate: [Link](#)

Speaker in

Workshop Title: “A HANDS-ON WORKSHOP ON COMPUTER VISION USING OPENCV PYTHON”

Date: 08 December 2023

Organized at: Institute of Space Technology, Islamabad (IST)

Certificate: [Link](#)

References

[Dr. Saif Ul Islam](#), Research Fellow (Cyber Systems Engineering) at WMG, The University of Warwick, Coventry, UK

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[Mughees Sarwar Awan](#), Assistant Professor at Institute of Space Technology, Islamabad, Pakistan

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