ZORAIN BIN KHALID

MECHATRONICS & CONTROL ENGINEER

Lahore, Pakistan
+92 307 2085009
zorainbk786@gmail.com
linkedin.com/in/zorain-bin-khalid-a082a9203
https://zorain12.github.io/Portfolio/

To work in a competitive environment so that I can groom my professional career & work for the growth of the respective organization. I have a practical approach to problem solving and a drive to see things through completion. I thrive in an environment which is conducive to teamwork, continuous learning and challenging my abilities.

Education

- 2019-23
  BSc Mechatronics and Control Engineering / University of Engineering and Technology, Lahore

- 2017-19
  High Secondary School Certificate / Punjab Group of Colleges, Lahore

---

Experience

Internee / Artificial Intelligence (Machine Learning & Deep Learning) By NAVTTC

- Proficient in AI fundamentals and ML techniques, adept at practical problem-solving and model evaluation using scikit-learn, TensorFlow, PyTorch, and more.
- Specializing in NLP, with expertise in NLP pipelines, text processing, stop words removal, Stemming/Lemmatization, POS tagging, named entity recognition, and deep learning techniques.
- Using API for Machine and Deep Learning, capable of working with numerical, image, and textual data for model development and deployment.

Internee / Pak Elektron Limited (PEL), Pakistan

- Worked in following departments: Refrigerator, Deep Freezer, Washing Machine and Water Dispenser.
- Look at all the processes and mechanisms.
- Provided automation solution for fridge assembly by designing an automatic PLC based Conveyor Mechanism from foaming plant to assembly line, to increase net production rate and to reduce energy consumption and hence increase net profit.
- After compiling the observations and generating a project plan, the project was presented to the supervisor that includes a thorough research report.

Projects

AUGMENTED REALITY BASED PROGRAMMING OF A ROBOTIC MANIPULATOR

Developed a user-friendly application for industrialists is the main objective of Final year project. By using AR technology, aimed to make the control and path planning of a robot easier for a common industrialist. The application was designed to provide a simple and intuitive interface that can be easily navigated by the operator. Created an immersive interaction of a robotic manipulator and its operation through Augmented Reality. Flexibility and ease of control and path planning of the robotic manipulator by anyone with no or limited professional training.

- Utilized Nreal developer's kit for mixed reality glasses, offering lightweight design and advanced tracking technologies for seamless AR experiences.
- Employed a 6 DOF robotic manipulator, capable of complex movements in six axes, for integration with AR control system.
- Leveraged Solidworks for precise CAD modeling of the robot and Unity3D for AR application development, with Visual Studio Code as the IDE for programming tasks.
- Throughout developed an AR application using Unity and AR Foundation framework, integrated with hand gesture recognition and intuitive interfaces for controlling the robot's movements. Additionally, employed techniques such as forward kinematics and inverse kinematics for accurate positioning of the robotic arm.

Deep Learning (CNN-Based) Urdu Alphabets Recognition

- Gathered diverse datasets 2000 samples for Urdu handwritten alphabet recognition and 500 images per student for 10 students for real-time face recognition.
- Implemented baseline CNN models LeNet, AlexNet, and VGG-16 for initial comparison and benchmarking.
- Customized CNN Algorithm designed a tailored CNN algorithm by fine-tuning hyperparameters, drawing inspiration from classical networks like LeNet, AlexNet, and VGG-16.
- Performance Evaluation compared the performance of the customized CNN model with baseline architectures, assessing improvements in accuracy, precision, and recall, showcasing the efficacy of the tailored approach.

Text Transformation using NLP Transformers

- Seamlessly integrates state-of-the-art NLP transformer models from Hugging Face for various tasks like sentiment analysis, question answering, translation, and text generation.
- Empowers users with a user-friendly frontend on Streamlit, offering easy access to powerful NLP capabilities for analyzing, understanding, and generating text across multiple languages and contexts.

NLP Preprocessing on Twitter Dataset

- In this comprehensive project, sentiment analysis is conducted on the Twitter dataset, followed by Exploratory Data Analysis (EDA).
- It utilizes NLTK's Twitter Corpus for diverse language support and implements a preprocessing pipeline to prepare tweets for sentiment classification, providing valuable insights for businesses and researchers.
- In the Preprocessing Pipeline for Tweets, URLs, hashtags (only the hashtag symbol), numbers, retweet text "RT", mentions, and repeated characters (only 3 characters or more) are removed. The tweet is then tokenized, converted to lowercase, stopwords, and punctuation are removed, words are stemmed, and finally, the words are joined back together to return the processed tweet.

Certificates

- Artificial Intelligence (Machine Learning & Deep Learning) – NAVTTC
- Deep Learning by Andrew Ng – COURSERA
- Azure AI Fundamentals – MICROSOFT

Skills

- Microsoft Office
- Data analysis and visualization
- Fine Tunning
- Computer Vision
- Data Preprocessing
- Model evaluation and optimization
- API Development
- Natural Language Processing (NLP)

Programming Language: Python with some libraries (Django, Fast API, NumPy, Pytorch, TensorFlow, Scikit learn, Pandas, Matplotlib, Seaborn), Embedded Programming (Arduino), PLC (LD / FBD / SFC).

Interests

- Generative AI
- Robotics & AI
- Data Analytics
- Machine Learning & Deep Learning
- Augmented Reality (AR) & Virtual Reality (VR)
- Embedded System

Personal Skills

- Strong interpersonal & leadership skills
- Adaptability to changing priorities & challenging tasks
- Believes in empowering & inspiring each other to promote environment for ideal team

---

Extra-Curricular Activities

- Travelling • Cinematography • Photography • Social welfare Work