MALHAR INAMDAR

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Education

Pune Institute of Computer Technology, India 2023 - 2027

Bachelor of Engineering (B.E.) in Electronics and Telecommunication *9.23/10.00*

Coursework: Data Structures, Algorithms, Digital Circuits, Differential Equations, Linear Algebra, Vector Calculus

MOOCS: Machine Learning Specialisation, Deep Learning Specialisation

Technical Skills

Programming Languages: Python, C++, C, Javascript, Java

Tools & Frameworks: PyTorch, Tensorflow, Langchain, NumPy, Pandas, Transformers, LLMs, OpenCV, Scikit Learn, NodeJS, Firebase

Software: Git, Github, Flask, VS Code, Streamlit

Experience

Vizuara Oct 2024 – Present

Research Intern *Pune, India*

- Working under Dr. Raj Dandekar to write a research paper analyzing language complexities conducting research in developing Small Language Models (SLM) to improve the comprehension of regional Indian languages, enhancing inclusivity in linguistically diverse contexts.
- Analyzing the performance of different multilingual open source LLM's for synthetic data generation and model complexities for producing suitable coherent output during inference.

Pune Institute of Computer Technology Sep 2024 – Present

Research Intern *Pune, India*

- Working under Dr. Geetanjali Kale to conduct research on improving diagnostic efficiency in diabetes prediction using Explainable AI tools like LIME and SHAP, focusing on enhancing model interpretability and patient trust.

PICT Robotics Oct 2023 – Present

Technical Member *Pune, India*

- Selected as a Technical Member of PICT Robotics, a dedicated college club for robotics. Preparing for ABU Robocon 2025, national level robotics competition.
- Designed PCB circuits and Fusion360 CAD Designs for robot designing and built multiple robots, with esp32, IR, Ultrasonic, Hall sensors, like line following robot, ultrasonic sensor robot, hall sensor robot.

Projects

DiabetesCare AI Github Link

Scikit Learn, GridSearch, RandomForest, NumPy, Pandas, seaborn, Gemini LLM, Streamlit *Website*

- Built a diabetes prediction system that predicts the occurrence of diabetes in patients based on 8 different medical parameters (gender, age, hypertension, heart disease, smoking history, bmi, HbA1c level, blood glucose level).
- The model was trained on more than 100,000 samples of data and utilized Random Forest algorithm to achieve accuracy of more than 94%. Visualized patient reports displayed for better comprehension of patient health.
- Tuned hyper parameters using GridSearch and used SMOTE to handle imbalanced dataset.
- Also used Gemini LLM API employing gemini-1.5-flash model to provide the patients who are detected positive with personalized lifestyle and dietary suggestions along with information about nearest hospitals in India.
- Integrated a chatbot using Gemini LLM to provide patients a means to interact and solve their queries. Deployed the project on Streamlit for user friendly interface.

Stable Diffusion from scratch Github Link

PyTorch, NumPy, Transformer, tqdm, lightning, pillow *Paper Link*

- Implemented the "Denoising Diffusion Probabilistic Models" research paper from scratch using PyTorch.
- Constructed generative models for text-to-image, image-to-image functionality producing high quality images based on input prompt.

- Implemented the architecture using the Variational Auto-encoder (VAE) utilizing U-Net and CLIP Encoder for de-noisification to generate output image.
- Ensured semantically meaningful output images were produced using suitable attention mechanism incorporated in the pipeline.

AgroFarm Github Link

Scikit Learn, Logistic Regression, NumPy, Pandas, seaborn, matplotlib, Streamlit *Website*

- Built an agricultural crop recommendation system using machine learning. The farmer can provide the soil and weather data from their side and the model predicts the suitable crop to grow.
- The input parameters include nitrogen, phosphorus, potassium content, temperature, humidity, ph and rainfall. Achieved high accuracy on the logistic regression model more than 95%.
- The system predicts crop from 20 different crop choices. Deployed the project on Streamlit for user friendly interface.

MCQ Generator Web Application Github Link

Gemini LLM, Streamlit *Website*

- Web application built for generating multiple choice questions by analyzing a file to be input by the user in text(.txt) or pdf format.
- The mcqs generated can be in varying order of difficulty as per the choice of user, easy, medium or hard.
- Number of questions are also to be input by the user as per their requirement.
- Used gemini-1.5-flash model for the implementation.

Awards

Cretronix Runner-up Credenz'24 April 2024

- Our team of two, was the runner-up in the electronics circuit and arduino microcontroller programming competition at PICT IEEE's annual technical fest Credenz.

2nd in research idea presentation track Pulzion'24 Oct 2024

- Stood 2nd in the research Idea Presentation track of Paper Presentation competition held as part of PICT ACM's annual technical fest Pulzion.