MALHAR INAMDAR

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Profile summary

A passionate and driven engineering student focusing on machine learning and artificial intelligence, with hands-on experience in developing practical solutions through technical projects and research internships. At Vizuara, developing small language models (SLM) for regional Indian languages, and at Pune Institute of Computer Technology, working on improving diagnostic efficiency in diabetes prediction using Explainable AI techniques. Seeking opportunities to conduct meaningful research on complex problems that have a positive impact and expand technical expertise in advanced machine learning applications.

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 conducting research in developing Small Language Models (SLM) for regional Indian languages.
- Targeting publication at ICML 2025.

Pune Institute of Computer Technology Sep 2024 – Present

Research Intern *Pune, India*

- Working under Dr. Geetanjali Kale to write a research paper conducting 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 (07/2024 - 08/2024) 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.
- 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 (10/2024 - 11/2024) Github Link

PyTorch, NumPy, Transformer, tqdm, lightning, pillow, UNet, VAE, CLIP Encoder *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.

AI - Based Diagnostic Assistance (Ongoing) Github Link

CNN, Scikit Learn, Tensorflow, Keras, GradCAM, NumPy, Pandas, Matplotlib, OpenCV

- Currently developing an AI based diagnostic tool to assist doctors in diagnosing diseases through medical imaging (X-Rays, MRI) to detect abnormalities and providing potential diagnoses as part of PICT International Techfiesta Hackathon 2025.
- Utilising GradCAM (Gradient-weighted Class Activation Mapping) for visual explanations to improve interpretability and trust in diagnostic decisions.

AgroFarm (03/2024 - 04/2024) 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% predicting from among 20 different crop choices. Deployed the project on Streamlit for user friendly interface

MCQ Generator Web Application (08/2024 - 08/2024) Github Link

Gemini LLM, Streamlit *Website*

- Web application deployed on Streamlit 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 along with 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.