Vedant Pimple

Roll No.: 210005051
B.Tech
Metallurgical Engineering and Materials Science
Indian Institute Of Technology, Indore

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EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major	Indian Institute of Technology Indore	7.39 (Current)	2021-Present
Senior Secondary	MSBSHSE Board	89.33%	2021
Secondary	MSBSHSE Board	89.20%	2019

PROJECTS

- **Langchain Chatbot** *Jan 2024*

  Built a conversational AI using LangChain, Cohere, and Hugging Face for natural, context-aware interactions. GitHub Link
  - **Document Processing Pipeline**: Built a pipeline to load, split, and embed text documents (e.g., research papers, lecture notes) into 400-character chunks using Hugging Face embeddings, enabling efficient semantic retrieval.
  - **Contextual Awareness**: Integrated chat history and contextual compression to enhance conversational coherence, allowing the AI to retain context and deliver accurate, context-aware responses.
  - **Semantic Retrieval**: Implemented a Chroma vector store and semantic similarity search to retrieve the top 7 most relevant document chunks, ensuring precise and contextually relevant answers.

- **Plant Disease Detection System** *July 2024*

  Developed an AI model for diagnosing 38 plant diseases across 14 species using deep convolutional networks. GitHub Link
  - **Deep Learning Architectures**: Developed and trained deep CNNs, including custom multi-layer CNNs, and leveraged transfer learning with VGG16 and ResNet34 models for plant disease classification.
  - **Large-Scale Dataset and Efficient Processing**: Processed 70,295 training images and 17,572 testing images from 14 plant species, resizing to 128x128 pixels and optimizing the training pipeline with GPU batch processing.
  - **Deployment and Real-World Impact**: Achieved 98.42% test accuracy and deployed the model as a web application using Flask for real-time plant disease diagnosis, contributing to agricultural productivity and food security.

- **Resume Parser and Job Recommendation System** *June 2024*

  Developed system for efficient resume parsing and accurate job recommendations using ML and NLP. GitHub Link
  - **ML and NLP Integration**: Developed a resume categorization model using TF-IDF vectorization and Random Forest algorithms, combined with NLP techniques to extract key features from over 10,000 resumes.
  - **Results Achieved**: Attained 95% accuracy in resume classification and 90% accuracy in job matching, significantly enhancing the effectiveness of the recruitment process.
  - **Deployment and User Experience**: Deployed the application using Flask, providing an intuitive interface for recruiters to perform real-time resume analysis for the recruitment process.

- **Chest X-Ray Classification using Vision Transformers** *Jul 2024*

  Developed a medical AI system for detecting pneumonia from chest radiographs using Vision Transformers. GitHub Link
  - **Vision Transformer Implementation**: Designed and trained a ViT model from scratch achieving 76.9% test accuracy with interpretable attention maps highlighting pathological regions.
  - **Medical Image Analysis**: Processed and classified chest X-rays with 95% precision for normal cases and 73% precision for pneumonia detection, demonstrating strong diagnostic capability.
  - **Clinical Relevance**: Achieved 0.84 macro F1-score, with model focusing on clinically significant lung regions as verified by attention visualization.
  - **Performance Optimization**: Implemented learning rate scheduling and gradient clipping to stabilize training of transformer architecture on medical imaging data.

TECHNICAL SKILLS

- **Programming**: C++, Python, SQL
- **Frameworks**: TensorFlow/Keras, PyTorch, Scikit-learn, NLTK, Spacy and LangChain
- **Data Analysis & Visualization**: Numpy, Pandas, MySQL, Matplotlib, Seaborn
- **Simulation Software**: MATLAB, Origin Labs, ImageJ software
- **Other Skills**: Microsoft Office Suite, Microsoft Power BI
- **Soft Skills**: Teamwork, Problem-solving, Adaptability, Creativity, Strategic Thinking

KEY COURSES TAKEN

- **Mathematics**: Linear Algebra and Ordinary Differential Equations-I, Calculus, Complex Analysis and Differential Equations-II, Numerical Methods
- **Machine Learning & Deep Learning** : Data Structures and Algorithms, Supervised and Unsupervised Machine Learning, Neural Networks, Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Self-Organizing Maps (SOMs), Natural Language Processing

Positions of Responsibility

- **USG of Delegate Affairs**, MUN'23, IIT Indore

<div align="right">Apr. 2023 - Oct. 2023</div>