RAMDULAR YADAV
AI/ML Engineer

Computer Engineering
IOE Purwanchal Campus, Dharan, Nepal

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Passionate AI/ML Engineer with expertise in Machine Learning, Deep Learning, and Data-Driven solutions. Skilled in Python, mathematics, and problem-solving, with a strong foundation in probability and statistics. Thrives on transforming data into actionable insights and continuously learning new technologies to drive innovation in AI and machine learning applications

TECHNICAL SKILLS

Expertise: Machine Learning, Deep Learning, NLP, OCR, Computer Vision, Image Processing, Generative AI (GANs), Retrieval-Augmented Generation (RAG), Prompt Engineering.

Programming Languages: Python, C++, SQL, Bash, HTML/CSS.

Libraries and Frameworks: TensorFlow, PyTorch, Django, Scikit-learn, OpenCV, Hugging Face, Pandas, NumPy, Matplotlib, Seaborn.

Cloud and Deployment: Microsoft Azure, Docker, Kubernetes, Streamlit.

Big Data Tools: Hadoop, Spark, SQL.

Developer Tools: Jupyter Notebook, VS Code, Git, Anaconda, Colab, GPT/LLM API integrations.

Soft Skills: Leadership, Management, Teamwork, Communication, Creative Thinking, Analytical & Problem-Solving.

PROJECTS

FuturProctor: In-Browser Proctoring System
– Developed an AI-powered in-browser proctoring system to ensure the integrity of online exams.
– Leveraged **YOLOv3** for real-time object detection to identify unauthorized items in the exam environment.
– Integrated **Dlib** for facial detection to monitor the user's attention during the exam.
– Used head-pose estimation to detect suspicious behavior by tracking changes in head movement.
– Implemented audio detection for environment analysis to identify unusual sounds or distractions.
– Designed and implemented browser lockdown features to restrict access to unauthorized websites and applications.
– Generated detailed reports to assess cheating behavior, based on real-time monitoring and analysis.
– Built the entire system with **Django** as the backend framework and achieved **90% accuracy** in detecting cheating behaviors.

Resume Parser
– Developed an intelligent **OCR-based tool** for extracting key details from resumes using **Natural Language Processing (NLP)**.
– Automated extraction of essential information like names, skills, education, and work experience, helping recruiters save time and make better hiring decisions.
– Used **Tesseract OCR** and **pdf2image** for text extraction from scanned resumes and PDFs.
– Leveraged **SpaCy's Named Entity Recognition (NER)** to identify and categorize key entities such as names, dates, skills, and locations.
– Built an intuitive UI with **Streamlit** to allow users to upload resumes and instantly view the extracted data.
– Achieved **90% accuracy** in extracting structured information from resumes.

Image Caption Generator

– Implemented an **Image Caption Generator** using a combination of the **Flickr8k dataset** and a personally curated collection of 150 real-world photos, each with corresponding captions.

– Initially leveraged the **VGG16 model** for image feature extraction and **LSTM (Long Short-Term Memory)** networks for generating descriptive captions, achieving about **40% accuracy**.

– Evaluated the model using BLEU scores:

  – **BLEU-1: 0.534**
  – **BLEU-2: 0.286**
  – **BLEU-3: 0.189**
  – **BLEU-4: 0.083**

– Switched to **Vision Transformer (ViT)** and **GPT-2**, significantly improving the quality and relevance of the generated captions.

Fine-tuned DistilBERT for Intent Detection

– Fine-tuned a pretrained **DistilBERT model** for intent detection, improving the accuracy of understanding user intent in text-based applications.

– Utilized a custom dataset to train the model, enabling the detection of various intents with high precision.

– Implemented **Transformers** and **Hugging Face's library** to fine-tune and deploy the model.

LangChain QA Chatbot

– Developed a Question-Answering chatbot using **LangChain** and the **LLaMA model**.

– Implemented the chatbot to efficiently handle a wide range of queries by leveraging the LLaMA model's natural language processing capabilities.

– Fine-tuned the **LLaMA model**, integrated it with LangChain, and optimized the response accuracy, improving the system's efficiency in answering user queries.

– Created an interactive and user-friendly experience, providing users with accurate and quick responses.

Student Performance Indicator

– Conducted thorough **Exploratory Data Analysis (EDA)** to analyze student performance data.

– Compared the performance of various algorithms including **KNeighborsRegressor**, **DecisionTreeRegressor**, **RandomForestRegressor**, and **AdaBoostRegressor**, with **Linear Regression** emerging as the optimal choice.

– Trained and evaluated the model, achieving high accuracy on the test data.

– Developed an end-to-end machine learning pipeline, from data preprocessing to model deployment.

Sign Language Detection

– Developed a **sign language detection system** using the **YOLOv8 model**.

– Fine-tuned the model with custom-created data to accurately identify and interpret sign language gestures.

– Utilized **Roboflow** tools for efficient data annotation, ensuring high-quality training data.

– Integrated advanced **computer vision techniques** with custom model training for real-world applications, aiming to improve accessibility and communication for individuals with hearing impairments.

Face Recognition Attendance System

– Developed an end-to-end **face recognition attendance system**, deployed with a user-friendly interface using **Tkinter**.

– Harnessed deep learning techniques to accurately identify and record individuals, automating attendance tracking.

– Integrated **OpenCV** for real-time face detection and recognition, ensuring high accuracy and efficiency.

– Streamlined attendance management workflows by eliminating manual data entry and ensuring error-free records.

– Deployed the system in real-world scenarios for automated attendance tracking in classrooms and offices.

Car Price Prediction

– Created a project to estimate car prices by gathering data, training the system, and deploying it with **Flask**.

– Built the model using popular machine learning algorithms, with **RandomForestRegressor** as the primary model for car price prediction.

– Conducted **Exploratory Data Analysis (EDA)** to visualize relationships between features and car price.

– Applied data preprocessing techniques to handle missing data, categorical variables, and scale features to improve model performance.

– Deployed the system using **Flask**, providing a simple web interface to input car details and get real-time price predictions.

– Developed a **user-friendly interface**, allowing users to submit car details and receive price predictions instantly.

EDUCATION

- **Himalayan White House International College**   *2019-2021*
  +2 Science   **CGPA: 3.35**

- **IOE Purwanchal Campus, Dharan**   *2021-2025*
  Bachelor of Computer Engineering

WORK EXPERIENCE / EXTRACURRICULAR

- **Fusemachine**
  AI Fellowship   April 2024 - November 2024

  - Successfully completed a 6-month AI Fellowship, covering advanced topics in **AI/ML**, **data science**, **regression and classification**, **clustering**, **neural networks**, **image processing**, **NLP**, and **reinforcement learning**.
  - Gained hands-on experience through projects involving **predictive modeling**, **web scraping**, **model deployment**, and **reinforcement learning**, enabling the implementation of real-world AI applications.
  - Explored advanced AI concepts like **Transformers**, **Large Language Models (LLMs)**, and **MLOps**, and gained expertise in deploying scalable and efficient AI models.
  - Collaborated on group projects, enhancing teamwork, problem-solving, and communication skills while applying AI technologies to solve complex problems.
  - Deployed machine learning models in production environments using **MLOps** practices, ensuring that models were scalable, maintainable, and efficient.

- **CodeforNepal**
  Data Fellow   january 2021- April 2022

  - Completed Data Camp as part of the Fellowship, honing skills in Python, machine learning algorithms, and data analysis and manipulation.

- **Karma Technology**
  Data Analyst   November 2023 - May 2024

  - Responsible for creating datasets crucial to the success of the team's data-driven projects. Played a pivotal role in ensuring the availability of high-quality information, contributing significantly to the company's effective decision-making processes.

CERTIFICATIONS

- Python
- Data Science Course - Mastering the Fundamentals
- Introduction to Machine Learning
- Intro to ChatGPT and Generative AI
- Microdegree in Artificial Intelligence - Fusemachine AI Fellowship