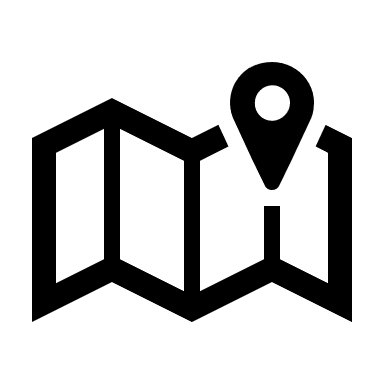
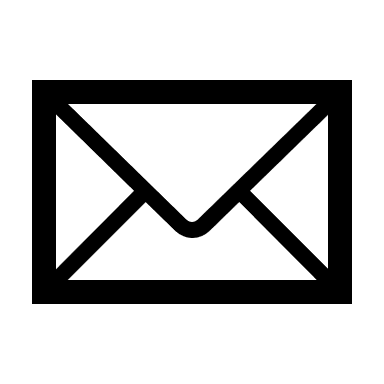
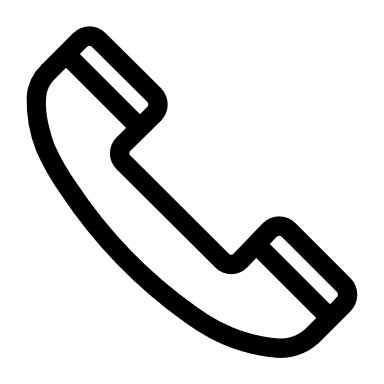
**MIRAJ DEEP BHANDARI**

***Eager AI enthusiast with a passion for applying academic knowledge to drive meaningful insights, possessing strong problem-solving skills, and seeking opportunities for growth and advancement in a dynamic organization.*** A black and white logo

Description automatically generated

[**mirajdeepbhandari30@gmail.com**](mailto:mirajdeepbhandari30@gmail.com)[**https://github.com/mirajdeepbhandari**](https://github.com/mirajdeepbhandari%20%20%20%20%20%20) 

****[**linkedin/mirajdeepbhandari**](https://www.linkedin.com/in/miraj-deep-bhandari-624bb0263/)  **Kavresthali,Balaju,Kathmandu** A black circle with a face

Description automatically generated

**9844341574**

**TRAININGS :**

* **AI FellowShip Fuse Machines** *Fuse Machines / Apr 2024 – Oct 2024*
* **Artificial Intelligence Training** *Broadway Infosys / Jun 2023 – Sep 2023*
* **Python Django Training** *Broadway Infosys / Dec 2023 – Feb 2024*
* **Data Science Intern** *Oasis Infobyte / Sep 2023 - Oct 2023*

**EDUCATION :**

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| --- | --- |
| **Secondary Education** | **Green Lawns Academy / Kathmandu** |
| **Higher Secondary Education** | **Everest Innovative College / Kathmandu** |
| **Bachelor's (Bsc.hons Computing)** | **Islington college / Kathmandu** |

**TECHNICAL STACK :**

* **Data Science / Machine Learning / Deep Learning** 🡪

Python OOP, Data Preprocessing, Data Visualisation, Supervised Learning Algorithms, Unsupervised Learning Algorithms, EDA, Feature Engineering, Feature Selection Techniques, ANN ,CNN, RNN, NLP, GAN, Transformers, VIT, LVM, LLM.

* **Mathematics for ML & DL** 🡪

Linear Algebra, Probability, Statistics, Calculus and Matrices.

* **Python Packages and Frameworks** 🡪

Scikit-Learn, Tensorflow, Pytorch, Pytorch Lighting, Keras, Numpy, Pandas, Matplotlib, Seaborn, Plotly, Beautiful Soup, Selenium, NLTK, Spacy, Scipy, StreamLit, Django, FastApi, PyShark, Audrino IDE, Tinker, HuggingFace, Langchain, Llama Index.

* **Computer Vision Frameworks** 🡪

Open CV, YOLO, Media Pipe, DLIB, VIT.

* **Programming Languages** 🡪

Python, JAVA OOP, .net , JavaScript.

* **Web Development** 🡪

HTML, CSS, JS, Node JS, Express JS, MongoDb, React JS, JAVA JEE, Jquery, Bootstrap, Tailwind, Jjinja, .net Blazor (WEB+ MOBILE APP), Figma, Django, MySQL, ORACLE, PostgreSQL, GIT.



**Projects :**

**Inbrowser Protection (ONLINE EXAM CHEATING PREVENTION):**

Developed a browser-based security system to prevent online exam cheating, incorporating **object detection**, **gaze detection**, **face recognition**, and **audio analysis** to identify suspicious behavior. Enabled real-time monitoring to prevent **screen sharing**, **tab switching**, **use of AI for answers**, **Google searches**, and other cheating attempts. Provided an admin dashboard for reviewing flagged activities, including images, messages, and audio, ensuring effective oversight and security.

**AI-Powered Smart Classroom Management Application for Schools and Colleges (Edusync):**

Developed a full-stack web application for classroom management in schools and colleges**, integrating both AI and web features**. Key functionalities include **post** ,**assignment management**, **attendance tracking via face recognition**, **AI-powered slide generation, plagiarism** and **AI content detection**, **note summarization**, and **MCQ generation for teacher-student interaction**. The app also features an advanced ranking system (RAG) for **notebook queries**, a **chatbot** for interactive student-teacher communication, and a **chat feature** for additional communication.

**Nepali Image Caption Generation Model Built from Scratch Using ViT and GPT Architecture:**

Built an image captioning model from scratch using Vision Transformer (ViT) and GPT architecture. The model was trained on a dataset containing images paired with Nepali captions, enabling it to generate accurate and context-aware descriptions in Nepali. Additionally, the feature was successfully deployed in a web application, allowing users to upload images and receive generated captions in real time.

**Language Translation Model Built from Scratch Using Transformer Architecture:**

Built a language translation model from scratch using the complete Transformer architecture, as outlined in the original paper. The model was trained on a German-English dataset and successfully performed accurate language translation between the two languages. The project leveraged the powerful attention mechanisms of the Transformer model to achieve high-quality translation results.

**Multi Object Classification Model Built from Scratch Using Vision Transformer (ViT):**

Developed an image classification model from scratch using Vision Transformer (ViT) architecture. The model was trained on a custom dataset to accurately classify images of various objects, leveraging the power of transformer-based techniques for enhanced performance over traditional convolutional neural networks (CNNs).

**Named Entity Recognition (NER) Using BERT Architecture:**

Implemented a Named Entity Recognition (NER) model using the BERT architecture. The model was fine-tuned on a specific dataset to accurately identify and classify entities such as names, organizations, locations, and other key terms within text. By leveraging BERT’s transformer-based approach, the model achieved improved accuracy and context-aware entity recognition, making it more effective than traditional NER models.

**Sentiment Analysis Using RNN, LSTM, GRU, and Transformer-Based Architectures:**

Implemented and updated sentiment analysis models using GRU, LSTM, BiLSTM, BiGRU, and Transformer-based architectures such as BERT, DistilBERT, RoBERTa, and Additive Attention for multiclass classification. The models were developed and fine-tuned separately for each architecture on different datasets, including large datasets, with improvements.

**Development of AI Enhanced Smart Parking Management System (Integration of Object Detection + IOT + Cloud Computing):**

Developed an AI-driven Smart Parking Management System integrating Object Detection, IoT technology, and Cloud Computing. The system optimizes parking space utilization and enhances user experience in real-time by employing advanced sensors and deep learning models to track parking slot availability. Users can park their vehicles efficiently with guidance provided by the Object Detection system.

**Development of Next Word Suggestion From Scratch using RNN and GRU, BILST, Deep LSTM:**

Developed a next-word suggestion system using RNN and LSTM architectures, applying natural language processing to large text datasets for accurate word prediction based on context. Integrated the system into applications like writing assistants, predictive text, and search engines to enhance user experience and productivity.

**News Category Prediction and Email Spam Detection:**

Developed a web application for News Category Prediction and Email Spam Detection using a combination of traditional machine learning techniques and deep learning approaches. Integrated RNN, LSTM, GRU, Transformer architectures, and classical algorithms to classify news articles into categories and detect spam emails. The system leverages advanced text analysis and processing for accurate and efficient performance, enhancing automation and user experience.

**Laptop Price Predection Web Application (Regression Project):**

Developed a regression-based laptop price prediction system using comprehensive dataset, advanced data processing, and EDA. Enhanced accuracy through feature engineering, trained and fine-tuned model using scikit-learn. Created user-friendly web app with Streamlit for seamless model integration, offering innovative laptop price forecasting solution.

**Large Language Model (LLM)** **:**

* Fine-tuned LLAMA2-3, Mistral, and Gemma large language models and use it according to the

Business usecases

* Implemented quantization techniques like **LORA, QLORA, GGML**, and **GGUF** for large parameter models, performing CPU-based model inference locally, and produced a detailed PDF with mathematical explanations.
* Developed an end-to-end **RAG** project on GPU as well as on CPU, utilizing **LangChain, Groq API,** and **open-source models** and **OLLAMA**.
* Created a Food Recipe Chat Bot using LangChain and Django.
* Developed a PDF Summarizer with LangChain and Django, including relevant notes for the LLM community.
* Developed a LLM project for **generating storybooks**, incorporating various **Crew Ai** **Agents**, **LangChain tools, Groq API, and the Stable Diffusion model.**
* Created an SQL Database data Extractor project using LLM and LangChain.
* Developed an end to end **Text-to-Speech project** integrating LangChain and open-source LLM models.
* Developed a **multiple-choice question generator** project based on **uploaded PDFs**.
* Conducted research and established a free open-source LLM repository, covering LLM implementation, mathematics, and relevant notes.

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**Performed Vehicle Collision Dataset Analysis: Seattle Department of Transportation (SDOT):**

Performed an in-depth data analysis on the Vehicle Collision Dataset from the Seattle Department of Transportation to uncover patterns and factors contributing to collisions in Seattle. Explored the frequency, severity, and distribution of collisions, identifying areas of concern and opportunities for improving road safety measures. The data-driven analysis aims to contribute towards policies and initiatives that prioritize road safety for the community.

**Database Full Schema Design and Implementation In Oracle Database for Ecommerce Platform:**

This project entailed designing and implementing a database schema in Oracle Database for an e-commerce platform. It started with creating a conceptual data model to capture business rules and entity relationships, followed by designing a logical schema for optimal data integrity and retrieval efficiency. Using Oracle Database, the schema was implemented with essential tables, columns, constraints, and relationships. Customized database queries and reports were developed to support business operations and decision-making.

**Developed Full Stack Java JEE-Powered, Fully Responsive E-Commerce Platform for Selling Mobile Devices:**

Developed a full-stack, Java JEE-powered e-commerce platform deployed on Apache Tomcat for selling mobile devices. The platform is fully responsive, offering seamless user experience across all devices. Key features include product listing, advanced search, user authentication, secure payment integration, and an admin dashboard for managing inventory, orders, and customer interactions. Designed for scalability and optimized performance, the application leverages Tomcat's robust deployment capabilities to handle a growing user base effectively.



**Certifications :**

* **Artificial Intelligence Training**

*Broadway Infosys – 28Th Dec 2023*

* **Python Django Training**

*Broadway Infosys – 8th Feb 2024*

* **Supervised Machine Learning: Regression and Classification**

*Stanford, DeepLearning.ai, Coursera – May 2023*

* **Unsupervised Learning, Recommenders, Reinforcement Learning**

*Stanford, DeepLearning.ai, Coursera – June 2023*

* **Advanced Learning Algorithms**

*Stanford, DeepLearning.ai, Coursera – June 2023*

* **Crash Course on Python**

*Google – March 2023*

* **Python for Data Science, AI & Development**

*IBM – March 2023*

* **Object Oriented Programming in Java**

*Coursera – April 2023*

* **AWS Academy Graduate - AWS Academy Cloud Foundations**

*Amazon Web Services – November 2023*

* **AWS Academy Graduate - AWS Academy Data Engineering**

*Amazon Web Services – November 2023*

* **AWS Academy Graduate - AWS Academy Machine Learning for Natural Language Processing**

*Amazon Web Services – November 2023*

* **AWS Academy Graduate - AWS Academy Machine Learning Foundations**

*Amazon Web Services – November 2023*



**Experiences :**

**DeepMind Creations Pvt Ltd (Bijuli Bazzar, KTM) Machine Learning Engineer (NLP)**

As a Machine Learning Engineer, I specialized in NLP tasks and contributed to the research and development of various products for the company.

**The specifics of my work are outlined below :**

1. Built the recommendation system application and customer profiling based on past purchase activities.
2. Developed Own Custom SQL Agent integrated with LLMs for fast queries by salespersons, enabling them to access product information through natural language

3. Developed a mass email generation system with the integration of LLMs and agents for email marketing.

4. Created a sales pitch for salespersons with the integration of LLMs and text-to-speech models.

5. Developed a full-stack scraping application using automation software and LLMs to generate leads from Google Maps.

6. Built an LLM application for scraping content from multiple websites (e.g., emails, products).

7. Developed a RAG (Retrieval-Augmented Generation) application for product inventory management.

8. Performed sentiment analysis on scraped lead shops using customer reviews and strategized outreach using LLMs and various tools.

9. Conducted product classification using LLM tools and agents.

10. Developed a routing system using the Google Maps API for locating leads, providing directions, and optimizing traffic.

**Languages :**

**English, Nepali, Hindi**



**REFERENCES :**

**Ayush Adhikari**

**DeepMind Creations / CTO | Lead Data Scientist | Artificial Intelligence Consultant | Machine Learning | Computer Vision**

Miraj is a disciplined, hardworking, and talented individual. I have personally guided and trained him in Artificial Intelligence. He possesses a sharp mindset for handling AI algorithms, with a deep understanding of Machine Learning algorithms as well as other Deep Learning algorithms including ANN, CNN, RNN, LSTM, GRU, Encoder-Decoder, Attention Mechanism, and Transformers. He has also worked with various Large Language Models (LLMs) such as OpenAI, Gemini, Llama, Hugging Face, and others. Miraj has a strong mathematical foundation for each Deep Learning algorithm from scratch and has experience working on computer vision projects. Additionally, he has excelled in NLP projects and has demonstrated great proficiency in both NLP and Computer Vision domains.

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[**aceraayush@gmail.com**](mailto:aceraayush@gmail.com)