MADHAV SUKLA BAIDYA

Roll No.:22054010
B.Tech + M.Tech - Department of Industrial Chemistry
Indian Institute Of Technology(BHU)

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EDUCATION

Indian Institute of Technology(BHU) Varanasi, India
Bachelor & Master of Technology(IDD) in Industrial Chemistry; GPA: 8.1/10

Maharishi Vidya Mandir Guwahati, India
Class XII , CBSE Board ; 93.6%
Class X , CBSE Board ; 93.4%

WORK EXPERIENCE

- **21 Spheres** **Jan 2025 - Present**
  - Developed a movie recommendation system leveraging machine learning to personalize user suggestions.
  - Engineered a fashion recommendation system using graphical data and deep learning for trend-based outfit suggestions.
  - Implemented automated code-to-documentation pipelines to enhance code maintainability and accessibility.
- **Indian Institute of Technology (BHU)** **Dec 2024 - Present**
  - Conducting research under Associate Professor Anil Kumar Singh on gender in grammatical systems, focusing on Hindi and other low-level languages.
  - Gaining hands-on experience in Computational Linguistics and Natural Language Processing.
- **Neobrim** **Oct 2024 - Dec 2024**
  - Conducted time series analysis on home automation devices to uncover usage patterns and optimize automation.
  - Built an ML model to predict homeowner behavior in smart home ecosystems, enhancing automation efficiency.
- **Indian Institute of Technology (BHU)** **Jan 2024 - March 2024**
  - Developed an MRI-to-CT image conversion model using VAE-CycleGAN, under Prof Sanjay Singh optimising latent space shaping to address epistemic uncertainty.
  - Enhanced discriminator architecture and applied data augmentation techniques to improve model accuracy and training efficiency.

PROJECTS

- **Generative Adversial Network(GAN)**
  - Developed a fashion generation model using Conditional GAN to create realistic and diverse clothing designs based on specific attributes.
  - Implemented an image dehazing model with Conditional GAN to enhance visibility and restore details in foggy or hazy images.
  - Designed a Day-to-Night image translation model using CycleGAN to seamlessly transform daytime images into realistic nighttime scenes.
- **Natural Language Processing (NLP)**

  Freelancer
  - Developing a model to refine English grammar correction at first using HuggingFace LLM and then using an Encoder-Decoder architecture with Seq2Seq and LSTM-based attention mechanisms.
  - Developing an English-to-Hindi translation model leveraging deep learning for accurate and context-aware translations.

- **Generative AI (GenAI)**
  - Developed a LinkedIn post generator using LLMs, leveraging fine-tuned transformers and prompt engineering to mimic user-specific tone and content style adaptation.
  - Developed an automated cold email generator by integrating web scraping for job data extraction, NLP-based resume matching, and LLM-driven email generation, ensuring personalized and context-aware outreach.
  - Fine-tuned a large language model (LLM) chatbot using domain-specific datasets for improved question answering, optimizing model performance through techniques such as transfer learning, data augmentation, and hyperparameter tuning.
- **Image Captioning Model**
  - Developed an image captioning system using VGG16 for feature extraction and SimpleRNN for text generation, enabling the generation of descriptive captions from images.
  - Preprocessed the Flickr8k dataset, aligning images with captions and cleaning text data. Implemented a dual-input model that combined image and text data for caption generation, evaluated the model using BLEU scores, and optimized training with custom data generators.
- **OpenCV**
  - Leveraged OpenCV and MediaPipe to build a facial emotion detection system and a custom hand sign recognition model, enabling accurate emotion identification and real-time learning and classification of hand gestures.
  - Developed a body pose estimator using OpenCV and MediaPipe, enabling real-time pose estimation for tracking gym activities and managing exercise repetitions, integrated into a Cloud Gym application for virtual workout monitoring

SKILLS

Languages: Python, C++, SQL, R
Frameworks: Keras, TensorFlow, Pandas, Numpy , PyTorch, OpenCV, Langchain, Scikit-learn, XGBoost, Transformers (Hugging Face), GPT-Index (LlamaIndex), PowerBi
Platforms: GitHub, VSCode, JupyterNotebook, GoogleColab
SoftSkills: Problem Solving and Critical Thinking ,Technical Writing, Time Management, Leadership, Creativity
Design: Figma, Canva,

VOLUNTEER EXPERIENCE

- **Aeromodelling Club(AMC), IIT BHU** **August 2023 - Present**
  - Head of Design Vertical of AMC
  - Volunteered various drone workshops- object detection using YOLO, drone path tracking, webots
- **Technex 2025, IIT BHU**
  - Event Head of team Dronetech, a drone flying competition
  - Design Volunteer of the Technex Team
- **Techfest 2024, IIT Bombay**
  - Lead a group of 4 people in International Drone Racing Competition organised at IIT Bombay
- **Society of Automotive Engineers(SAE), IIT BHU** **August 2023 - July 2024**
  - Content and Design Executive

ACHIEVEMENTS

BIONEST Hackathon (Runner-up)

Proposed a ML model that predicts the nutreint deficiency in the body based on Blood Report and also suggests necessary food intake