ABHISEK ABHIPSITA SAHOO

DATA SCIENTIST

Motivated, teamwork-oriented, and responsible Data Scientist with over 1.8 years of experience in leveraging advanced statistical methods, machine learning algorithms, and data visualization techniques to solve complex business problems and drive data-informed decision-making. Demonstrated expertise in data cleaning, exploratory data analysis (EDA), feature engineering, model building, and model deployment using various machine learning frameworks. Experienced in Generative AI, Large Language Models (LLMs), and OpenAI technologies. Exceptional problem-solving skills, proficient in working independently or as part of a collaborative team to deliver high-quality data solutions that enhance operational efficiency and business performance. Committed to staying updated with the latest industry trends and continuously expanding knowledge in Data Science and Generative AI to deliver innovative solutions.

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SKILLS

Soft Skills	Critical thinking, Leadership, Attention to detail, Adaptability, Creativity
Programming Language	Python
Machine Learning	Supervised ML- Linear Regression | Logistic Regression | Dimensionality reduction (PCA) | K-Nearest Neighbors | Support Vector Machines | Support vector Regression | Naive Bayes | Decision Trees | Random Forest | Boosting Unsupervised Learning - K-Means Clustering | Hierarchical Clustering | DBScan
Deep Learning	Convolutional Neural Networks (CNNs) | Recurrent Neural Networks (RNNs) | Artificial Neural Networks (ANNs) | Activation Function | Long Short-Term Memory (LSTM)
Natural Language Processing	Tokenization | Lemmatization | Stemming | Stopwards | Wordcloud | POS Tagging | Named Entity Recognition | Word Embeddings | Transformer Models (BERT) | Sentiment Analysis | Text Classification
Framework & Libraries	Scikit-learn | XGboost | LGBM | TensorFlow | PyTorch | Theano | Keras | Opencv | Yolo | MediaPipe | Haar Cascade Classifier | Scipy | Spacy | NLTK | Gensim | BeautifulShop | Pandas | NumPy | Matplotlib | Seaborn
Hugging Face	Transformers | Datasets | Tokenizers | Model Hub | Pipelines
LLM	Encoder-Decoder | Self-Attention | Transformer Models (GPT-3,GPT-4, Gemini, Llama 3) | GANS | VAE | Langchain
Software	Spyder | Jupyter | PyCharm | Visual studio
Web Technologies	HTML | CSS | Bootstrap
BigData	PySpark | Databricks
Database	SQL | MongoDB
Cloud	Microsoft Azure-ML

WORK EXPERIENCE

Tech Mahindra — Software Engineer — 2021- 2023

PROJECT: IMAGE GENERATION & VIDEO GENERATION FROM TEXT PROMPT

Description : The aim of this project is to utilize the multimodal architecture CLIP, which links text and visual elements, and combine it with a generative model incorporating a transformer. This integration will enable the generation of visual prompts from text inputs, and the capability to create videos through sequential generation from text prompts.

- Developed an architecture combining Open Ai's CLIP and VQGAN to generate high-resolution images and videos from text prompts.
- Implemented text and image encoders to predict and generate visuals from natural language inputs.
- Used augmentation, rotation, and translation to create multiple image crops for better understanding and synthesis.
- Applied vector quantization to enhance image quality by converting continuous-valued images into discrete codebook vectors.
- Conducted parameter optimization and training loops for text-to-image synthesis, handling single and multiple images.

Technologies: **Python, PyTorch, Torchtext, PIL, Imageio, Matplotlib, Numpy, Pandas, Tqdm, Einops, Omegaconf, Os, Pdb, Math, Yaml, VQGAN, Transformers, CLIP, Image Augmentation**

Responsibilities:

- Achieved high-resolution image synthesis using VQGAN with extensive fine-tuning.
- Improved image quality and diversity through image augmentation techniques.
- Used augmentation, rotation, and translation to create multiple image crops for better understanding and synthesis.
- Streamlined development and training processes using advanced ML libraries and frameworks.

INDEPENDENT PROJECTS

ADVANCED FACE AND EYE DETECTION USING OPENCV

Technologies: Haar Cascade Classifiers, Numpy, Computer Vision, Python

- **About Project:** I developed a robust face and eye detection system using OpenCV's Haar Cascade Classifiers. This project involved implementing image processing techniques to accurately detect and highlight facial features in real-time. By leveraging Python and libraries such as NumPy and OpenCV, I created a system capable of identifying faces and eyes within various images, ensuring high precision and performance.

REAL-TIME OBJECT DETECTION WITH YOLOV8

Technologies: Python, VS-Code, OpenCV, NumPy, YOLOv8, Deep Learning

- **About Project:** This project demonstrates advanced real-time object detection capabilities using the state-of-the-art YOLOv8 model. The objective is to accurately identify and locate objects in live video streams. It leverages Python and OpenCV for video processing, with YOLOv8 providing fast and accurate detection. Key features include a robust alert system for specific objects, performance metrics display, and detailed logging of detected objects.

WEB SCRAPING DATA SCIENCE JOB LISTINGS

Technologies: Web Scraping (BeautifulSoup),pandas, matplotlib, seaborn, WordCloud, EDA, Python, NLP

- **About Project:** Developed an intelligent tool to streamline data science job searches by utilizing web scraping and data visualization. Extracted key details from job listings using BeautifulSoup, cleaned and transformed the data with pandas, and created visualizations to reveal insights into the job market. This project provided valuable insights for professionals, job seekers, and recruiters to navigate industry trends effectively.

CHATBOT DEVELOPMENT USING LLAMA 3 BY META

Technologies: LLaMA 3, Hugging Face, Ollama, BitsAndBytes, Python, AutoTokenizer, Streamlit

- **About Project:** Developed a sophisticated chatbot leveraging the LLaMA 3 model by Meta to facilitate natural and engaging conversations. Utilized Hugging Face libraries for tokenization and model handling. Configured BitsAndBytes quantization for efficient model loading and inference.

CHATBOT- BHARAT AI BOT

Technologies: Gemini pro, NLP, Python, Gemini AI Studio, Streamlit

- **About Project:** This AI-driven chatbot is designed to engage in natural language conversations, providing human-like responses and enhancing user interactions. By utilizing advanced NLP techniques, Gemini-Pro can understand and generate contextually accurate answers, making it a game-changer in the world of customer service and support.

MULTITURN CONVERSATION USING GEMINI AI

Technologies: Gemini pro, NLP, Python, Gemini AI Studio, Streamlit

- **About Project:** The objective of the Gemini-Pro model(image to accurate text) chatbot project is to develop an interactive, AI-driven chatbot capable of engaging in natural language conversations, understanding user input, and generating human-like responses. This chatbot aims to enhance user experience through advanced Natural Language Processing (NLP) techniques, providing accurate and contextually relevant answers.

Major Project

PROJECT: ROAD WIDTH DETERMINATION FROM SATELLITE IMAGES

Synopsis :

Road width determination from satellite images using skeletonization and unique pixel counting algorithm' - The intent behind the ideation and making of this project is to solve real life problem of vehicle locomotion, in roads of non-satisfactory width w.r.t. the width of the vehicle. Determining road width from satellite images is crucial for solving the above issue. Image segmentation, edge detection, skeletonization and pixel counting techniques are implemented to show the basic ideation, working and potentiality of this project.

INTERNSHIP

Indian Railways

East Coast Railways • May 2018–Jun 2018

- I visited the Signal and Telecom Department, Ticketing System, Server Room, and Control Room of East Coast Railway.
- I learn how Indian Railways likely operates multiple data centers across the country to ensure redundancy and reliability.
- And how these data centers house servers that manage various critical systems, including passenger information, train operations, and maintenance.

PERSONAL PROJECT

- Website Deployment: https://eindia.netlify.app
- Autonomous Robotic Vacuum Cleaner
- Motion Detection Using PIR Sensor
- Workshop: Industrial Robotics And IIOT

EDUCATION

Bachelor of Technology in ECE
Institute of Technical Education and Research, Bhubaneswar
2016-2020
CGPA- 8.12

Intermediate: Science (+2)
Institute of Higher Secondary Education, Bhubaneswar 2014–2016
Scored: 62.6%

CERTIFICATIONS & ACHIEVEMENT

Microsoft Certified: Azure Fundamentals
https://www.credly.com/badges/bb544054-1087-4237-a591-4ed80485b61a?source=linked_in_profile

INDIA BOOK OF RECORDS HOLDER
https://indiabookofrecords.in/abhisek-abhipsita-sahoo-ibr-achiever/

LANGUAGE

- English
- Odia
- Hindi