NAMAN KUMAR RAI

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Education

International Institute of Information Technology (IIIT) Naya Raipur
B.Tech. in Data Science and Artificial Intelligence *Nov 2022 – Aug 2026*

Jawahar Navodaya Vidyalaya, Janjgir-champa, Chhattisgarh
High School Diploma *Jul 2014 – Jun 2021*

Experience

GSSoC Extended 2024 – Open Source Contributor |
(React.js, JavaScript) Oct 2024 – Nov 2024

- Merged 7+ pull requests across diverse open-source repositories in a short span, demonstrating quick adaptation and code quality.

Projects

Air Quality Index (AQI) Prediction
(Python, Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, Jupyter Notebook) June 2024 – Present

- Developed a machine learning model to predict AQI based on environmental pollutant data (PM2.5, PM10, NO, SO, CO, O).
- Performed data preprocessing including handling missing values, normalization, and feature engineering to enhance model accuracy.
- Conducted exploratory data analysis (EDA) to identify pollution trends and correlations affecting air quality.
- Trained and compared multiple models (Linear Regression, Random Forest, XGBoost), achieving over 90 percent R^2 score.
- Visualized AQI trends and model predictions using Matplotlib and Seaborn for clear insights.
- Built an interactive web app to AQI prediction and analysis.

Multimodal Emotion Recognition System (Facial Expression-Based)
(Python, TensorFlow/Keras, OpenCV, CNN, MediaPipe, Streamlit) Apr 2025 – Present

- Built a deep learning model to detect and classify human emotions (e.g., happy, sad, angry, surprised) in real time using only facial expressions captured from video or image frames.
- Implemented Convolutional Neural Networks (CNN) to extract key facial features from images and video frames using datasets like FER2013 and processed faces using OpenCV and MediaPipe.
- Enhanced model performance through image preprocessing, facial landmark detection, and data augmentation techniques to handle varying lighting, angles, and expressions.
- Built a real-time interactive demo using OpenCV and Streamlit to visualize live webcam-based emotion detection, showcasing use cases in human-computer interaction, mental health monitoring, and customer feedback systems.

Recommendation System for E-Commerce
(Python, Scikit-learn, Pandas, Flask/Streamlit, Surprise Library, TensorFlow) May 2025 – Present

- Developed a hybrid recommendation system using collaborative and content-based filtering to suggest personalized products based on user behavior and item attributes, while addressing cold-start issues with metadata integration.
- Deployed the model through a user-friendly web interface (Flask/Streamlit), enabling real-time, dynamic product recommendations similar to real-world e-commerce platforms.

Technical Skills

Languages: Python, SQL, HTML/CSS, C/C++,JavaScript,
Libraries: Pandas, NumPy, Matplotlib, Seaborn,Sckiti-learn, Tenserflow,Keras,PyTorch
Data Visualization: PowerBI, Tableau, Excel, MySQL
Dev Tools: Git, Git CLI, Github, Github Actions, VS Code, Jupyter Notebook, Google Colab,

Achievements

- Published Research Paper: *"A Multimodel Deep Learning Based Facial Emotion Recognition and Detection with Hyper Parameters"* [*IEEE Research Paper*]
- Proficient in leveraging AI tools like ChatGPT and Github Copilot for rapid prototyping, debugging, and writing optimized code.