



# Saarthak Gupta

[linkedin](#) | [Portfolio](#) | [Github](#) | [Medium](#)

Email : Saarthak.gupta.mec22@itbhu.ac.in

Mobile : 7303277192

## Skills

- **Languages:** Python(pandas, numpy, matplotlib, seaborn), SQL , C++
- **Frameworks:** Langchain, HuggingFace, pytorch, scikit learn, tensorflow, keras
- **Tools:** github, Mysql, powerBI

## Work Experience

### Research Internship | IIT Roorkee

Nov`23 - Jan`25

- Contributed to a review paper by implementing and evaluating 19 encoder models based on Multihead Attention, and VisionTransformer architecture for satellite image captioning across 3 datasets (SYDNEY, UCM, RSICD).
- Evaluated the quality of generated text using 7 different metrics to assess the quality of image captions generated by the models.
- Implemented greedy and beam search strategies to optimize and cluster the evaluation metrics for better model performance comparison.

## Projects

### Machine Translation using Transformer | [Link](#)

Developed a machine translation system **using the transformer architecture in PyTorch** to translate **English to Hindi**, utilizing the IIT Bombay English-Hindi dataset.

- Built the **entire transformer model from scratch using PyTorch**, including attention mechanisms and positional encoding, to effectively capture language patterns.
- preprocessed the data to **create efficient tokenized inputs** for bilingual translation.
- Assessed the **model's performance using BLEU scores** to ensure translation accuracy and improve model performance through iterative tuning.

### CLV Prediction for Auto-Insurance Company | [Link](#)

Developed a comprehensive Customer Lifetime Value (CLV) prediction model **to improve customer retention and marketing strategies**, leading to more informed business decisions.

- Leveraged machine learning techniques to predict CLV, optimizing hyperparameters with GridSearchCV for accurate predictions.
- Conducted comprehensive data preprocessing **followed by detailed EDA using statistical summaries, distribution analysis, and visualizations** to uncover insights.
- Created a web interface and dashboard for CLV predictions and customer insights, and **implemented a Q&A platform using Google's Gemini LLM to facilitate natural language queries, enhancing marketing strategies** and customer retention efforts

### EKYC | [Link](#)

The objective was To develop an advanced EKYC (Electronic Know Your Customer) verification system using RCNN and DeepFace for robust customer authentication and identity verification.

- Implemented contour detection to extract ID card images. Enhanced OCR accuracy with **RCNN (easyocr) for text detection and CRNN-CTC for text recognition**.
- Utilized **DeepFace for accurate face comparison, ensuring seamless verification** and reducing fraudulent activities.
- Built a user-friendly interface using Streamlit to streamline the EKYC process, enabling efficient customer registration and verification.

## Academic Qualifications

- **Indian Institute of Technology(BHU)** Varanasi, India  
Integrated Dual Degree in Mechanical Engineering; CGPA: 8.43  
2022 - 2027
- **S.R.D.A.V Public School** Delhi, India  
CBSE(Class XII); CGPA: 93.8%  
2022

## Achievements

- 2nd runner up in HackFest, a National data science competition conducted by Tredence Analytics.
- Finalist in Convolve (PAN IIT Data Science event).
- Data Science author for level up coding on Medium.