BASU VERMA

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EDUCATION

MTech, Data Science	Indian Institute of Technology, KL(IN)	May 2022
BTech, Electronics & Instrumentation	West Bengal University of Technology, W.B(IN)	May 2020

TECHNICAL SKILLS

Niche:	Deep Learning, Machine Learning, Computer Vision, Natural Language Processing
GenAI:	LLMOps, RAG, LangChain, DeepSpeed, Gaurdrail, VectorDatabase, LLM's
MLOps / LLMOps:	MLFlow, Github Actions, DvC, Iterative Studio, Docker,
Languages:	SQL, Python (pandas, numpy, seaborn), HTML, CSS, JS
Other Tools:	Flask, Streamlit, Excel, Power Point, AWS

EXPERIENCE

HCLTech, Banglore, IN: Technical Lead Aug 2022 – Present

- Developed End-to-End MLOps pipeline for computer vision usecases and LLMOps pipeline for Propietry or Opensource LLM's (MLFLow, Github Action, DvC).
- Designed UI to showcase all pipelines and Responsible AI initiatives in one unified platform.
- Implemented various CV, NLP, and GenAI use cases to showcase operational pipelines.
- Fine-tuned multiple LLM models (e.g., LLama, GPT-Neo) using various optimizers and increased model performance by upto 40%.
- Conducted onboarding sessions for teams to integrate and utilize developed pipelines efficiently.

Alorb Tech Pvt Ltd, Banglore, IN: Data Science Intern June 2021 – Aug 2021

- Created regression model for Air Quality forecasting in New Delhi stations.
- Utilized Auto-Regression and ARIMA techniques for predictive modeling.
- Implemented advanced statistical methods to improve accuracy in forecasting AQI.

ACADEMIC PROJECTS

Driver Drowsiness Detection April 2021 - May 2022

- Researched drowsiness detection combining Haar-Cascade and CNN for blink frequency classification, with YoLov5 for eye detection and blink frequency analysis.
- Developed a custom dataset for YoLo model containing 1336 training images with balanced open_eye and closed_eye classes, alongside 414 validation images.
- Integrated YoLov5m and YoLov5l models achieving outstanding accuracies of 98.2
- Demonstrated efficient frame processing times averaging 0.008 seconds using Tesla K80 GPU and 0.53 seconds on Raspberry Pi board 4.
- Demonstrated expertise in implementing advanced computer vision techniques for practical applications in driver safety within the realm of data science.

Multi-label Image Classification and Image Description March 2021 - May 2021

- Developed a multi-label image classifier for 20 options with around 85% accuracy, using pre-trained architectures Vgg16, Inception, and MobileNet.
- Built LSTM model for generating brief image descriptions, achieving 75% accuracy in one-line descriptions.
- Designed and implemented a user-friendly front-end interface using Flask to interact with the aforementioned models seamlessly.

PUBLICATIONS

- Research paper on "SignDiff: Diffusion Based User Dependent Online Signature Generation Framework" under review at "27th International Conference for Pattern recognition".
- Research paper on "Benchmarking of optimization strategies for LLM finetunning" under review at "Conference on Language Modelling".