DEEPAK GOEL

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EDUCATION

B.TECH (CSE)	2023-2027	NETAJI SUBHAS UNIVERSITY OF TECHNOLOGY	8.63/10

COURSEWORK : SOFTWARE ENGINEERING, OPERATING SYSTEM(**LINUX**), MATHEMATICS, DATABASE MANAGEMENT, DESIGN AND ANALYSIS OF ALGORITHMS, MACHINE LEARNING, COMPUTER ARCHITECTURE AND ORGANISATION, OPTIMIZATION TECHNIQUES, MICROPROCESSOR AND MICRO-CONTROLLER(x85 & x86)

SKILLS

- **LANGUAGES:** C++, **Python**, SQL
- **WEB DEVELOPMENT**: HTML, CSS, JavaScript, **React** , Tailwind CSS
- **AI-ML** : PyTorch , TensorFlow , NLP , Computer Vision , Data Processing , NLTK , spaCy , Streamlit , Scikit -learn, OpenCV, YOLO, Matplotlib, Neural Networks , CUDA , LLM , LANGCHAIN , AI AGENT
- **FRAMEWORKS**: React , Streamlit , FAST API, FLASK
- **TOOLS**: VS Code, Jupyter, Anaconda, GitHub , Google Collab , **DOCKER** , GIT , POWER BI , VERCEL, RENDER
- **DATABASES** : **SQL , MONGODB** , REDIS ,FAISS , CHROMA DB, FIREBASE

EXPERIENCE

INTERNSHIP AT NETAJI SUBHASH UNIVERSITY OF TECHNOLOGY

JUNE/2024-AUG/2024
DWARKA,DELHI

- Executed research under professor on the **IEEE Transactions paper(2022), "BiasFinder: Metamorphic Test Generation to Uncover Bias in Sentiment Analysis Systems"** .
- Developed and implemented the BiasFinder framework, applying Python,PyTorch,NLP and NeuralCoref for bias detection in SA models.
- **Benchmarked** BiasFinder on 10 SA models (**BERT, RoBERTa, ALBERT, ELECTRA, Muppet)** using large datasets (IMDB: 50K, Twitter: 1.6M).Validated results, confirming BiasFinder's ability to **uncover 8,469 BIAS-TEST-CASES(BTCs) (IMDB) vs. 906 (baseline), 24,883 BTCs (Twitter) vs. 805**.
- Analyzed **fluency improvements (28.57%)**, ensuring high-quality bias detection across gender, occupation, and country-of-origin biases.

PROJECTS

SENTIMENT-ANALYZER | Python, PyTorch, Streamlit

OCT/2024-OCT/2024

- Engineered an interactive **Streamlit-based frontend for real-time sentiment analysis using Python & PyTorch.**
- **Fine-tuned RoBERTa**, achieving **94.04% validation accuracy** for sentiment classification.
- Trained an **optimized LSTM model from scratch with 87.0% validation accuracy, low train loss (0.019), and dropout 0.5.**
- Applied **hyperparameter tuning** to enhance model performance for accurate sentiment predictions.

RAG-based Financial Chatbot | Mistral-7B, FAISS, FastAPI, React, Firebase

DEC/2024-DEC/2024

- Developed a **Retrieval-Augmented Generation (RAG) chatbot** using **Mistral-7B** and **FAISS** with a **FastAPI backend** and **React** frontend; migrated **document chunk embeddings and storage to Firebase (no local storage)**, improving financial query **accuracy by 40%.**
- Implemented **Firebase-based document upload and embedding pipelines** (PDF, DOCX, TXT), enabling on-demand retrieval and **reducing data management overhead by 50%.**
- Built a **voice-enabled interactive React UI** (leveraging custom speech-synthesis utilities), enhancing user engagement and **increasing average session duration by 35%.**
- **Architected a multi-agent query processing system** (query-analysis, retrieval, and response-generation agents), optimizing query routing and **improving response efficiency by 50%.**

Vehicle and License Plate Recognition and Speed with YOLO and OCR | YOLOv8, EasyOCR, Keras

JAN/2025-JAN/2025

- Created an end-to-end **vehicle and license plate recognition** system using **YOLOv8-L fine-tuned** on an Indian dataset.
- Achieved **98.55% precision, 99.02% recall, and 99.47% mAP@50**, ensuring high accuracy in real-time recognition.
- Integrated **EasyOCR/Keras for text extraction** from license plates in both images and videos.
- Implemented view transformation-based speed estimation, enhancing real-time enforcement accuracy.
- Optimized model performance with **low validation losses (Box Loss: 0.2843, Class Loss: 0.89039).**

Smart Scheduler AI Agent | Python, Mistral LLM, Google Calendar API

JUNE/2025-JUNE/2025

- Built a voice-enabled AI assistant for scheduling via Google Calendar using multi-turn LLM dialogue and contextual memory.
- Handled complex time expressions and conflicts with JSON-based LLM responses and real-time voice interaction (Google STT, ElevenLabs TTS).
- Designed modular, secure architecture with timezone handling, event parsing, and dynamic prompt management.

CERTIFICATE : QUANTUM COMPUTING : QUANTUM COMPUTING ACTS CDAC Hyderabad ,ACTS CDAC Hyderabad
Issued Jun 2025 · Credential ID CDACH/QML/862

- Skills: Quantum Computing · Quantum Theory · Machine Learning · quantum machine learning · Qiskit · quantum stimulators · Hybrid Quantum Algorithms · Deutsch-Jozsa Algorithm