Khushdeep Singh

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EDUCATION

IIIT Naya Raipur **November 2022 – Present**
B.Tech in Data Science and Artificial Intelligence *CGPA : 7.22*

The Aaryans, Meerut **May 2021**
Class XII *Percentage: 94.2%*

The Aaryans, Meerut **May 2019**
Class X *Percentage: 94.2%*

EXPERIENCE

Research Intern **May 2024 – July 2024** **[Certificate Link]**
Indian Institute of Technology, Jodhpur

- **Semi-Annotation Tool Design:** Developed a semi-annotation tool to streamline agricultural image annotation with bounding boxes, significantly improving efficiency and reducing manual annotation workload.
- **Leaf Tip Detection Enhancement:** Enhanced leaf tip detection for plant phenotyping analysis using YOLO and Faster R-CNN, increasing accuracy and aiding in better crop monitoring and health assessment.

PROJECTS

- **GenieRAG: Retrieval-Augmented Generation System** *FAISS, Facebook OPT-350M, Sentence Transformers, FastAPI*
  Designed and implemented a RAG system leveraging FAISS and Facebook OPT-350M for extracting and processing text from PDFs to generate precise responses. Integrated Sentence Transformers for generating embeddings and built a FastAPI framework for serving the model efficiently with optimized query performance. Enhanced retrieval accuracy by fine-tuning embedding models and improving indexing techniques for faster and more reliable text-based predictions.
- **MindReader: Emotion Detection Using Deep Learning Models** *CNN-GRU, CNN-LSTM, Sentence-BERT, Streamlit*
  Engineered CNN-GRU and CNN-LSTM architectures for emotion classification tasks, leveraging Sentence-BERT embeddings for semantic feature extraction. Developed a Streamlit app for real-time emotion detection and comprehensive model evaluation, improving user experience, engagement, and interactive visualization capabilities. Implemented extensive performance tuning techniques, including hyperparameter optimization and dropout layers, to boost classification accuracy and model robustness.
- **Cricket Batsman Performance Analysis System** *MongoDB, CatBoost, AWS EC2, Vercel*
  Scraped Cricbuzz data and stored it in MongoDB; used CatBoost to predict player performance with high accuracy and reliability. Deployed the backend on AWS EC2 and the frontend on Vercel, providing a full-stack, scalable solution for cricket analytics with real-time data insights. Incorporated advanced feature engineering techniques to improve predictive performance, enabling more precise player performance trends and match outcome forecasting.

PUBLICATIONS

- **Machine Learning Algorithms for Detecting Mental Stress in College Students,** IEEE I2CT 2024
- **Optimizing Well-Being: Unveiling Eustress and Distress through Machine Learning,** IEEE ICICT 2024
- **AI-Enabled Real-Time Exercise Monitoring with MediaPipe and OpenCV,** IEEE ICCNT 2024
- **A Deep Learning Approach for Early Stress Detection Using Electrodermal Activity through Wearable Devices**
  Accepted at: ICPR 2024

TECHNICAL SKILLS

Programming Languages: Python, SQL, C/C++, JavaScript, HTML, CSS, LaTeX
Frameworks & Libraries: TensorFlow, PyTorch, Scikit-Learn, NumPy, Pandas, Transformers, FastAPI, Matplotlib, SciPy, OpenCV
Developer Tools: Google Colab, Jupyter, Docker, Kaggle, GitHub, VS Code, PostgreSQL, MongoDB, Render, Vercel, Postman, DVC

CERTIFICATIONS

- **Machine Learning Specialization** October 2023
- **Deep Learning Specialization** March 2024