

Aditya Kumar Singh

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EDUCATION

Vellore Institute of Technology, Amaravati

B.Tech in Computer Science Engineering — 8.46/10

Aug. 2022 – Jul. 2026

EXPERIENCE

Machine Learning Intern

May 2025 – Present

TechtoGreen Drone & Robotics Pvt Ltd

Vijayawada, India

- Developed a Pearson-correlation-driven LSTM-Attention model to predict 7-day dissolved oxygen in aquaculture, applying linear interpolation, 3σ outlier removal, and min-max normalization for preprocessing, improving robustness and achieving 12% lower RMSE versus a baseline LSTM.
- Led a 4-member team to the finals of the *Bhashini Domain Innovation Challenge*, driving end-to-end development of an AI-powered solution for multilingual accessibility, and demonstrated innovation and leadership among 200+ competing teams.

PROJECTS

AI Workflow Builder | FastAPI, React, PostgreSQL, ChromaDB

Sep. 2025

- Designed and implemented a full-stack visual workflow builder for custom LLM applications with advanced Retrieval-Augmented Generation (RAG) using FastAPI, React/TypeScript, PostgreSQL, and ChromaDB vector search.
- Crafted modular drag-and-drop UI components supporting real-time workflow execution and multi-model orchestration with OpenAI and Gemini.
- Built RESTful APIs for workflow management, file uploads, document processing, and LLM execution, integrating semantic search for context-aware AI responses.

Hate Speech Detection with Fine-tuned BERT | Hugging Face, Flask

Aug. 2025

- Fine-tuned a Hate Speech Detection model on Kaggle's Jigsaw Toxic Comment Challenge dataset using Hugging Face Transformers, achieving multi-label classification across 6 toxicity categories.
- Built an interactive Flask web application that loads the trained model and provides real-time text classification with a clean frontend interface.
- Implemented an end-to-end ML pipeline covering data preprocessing, model training, model saving, and deployment as a user-friendly web app.

Deepfake Detection Using EfficientNet-B0 | Pytorch, OpenCV, Torchvision

Feb. 2025

- Engineered a state-of-the-art Deepfake Detection Model with EfficientNet-B0, leveraging CNNs to precisely distinguish real and fake images.
- Optimized the model on a high-quality labeled dataset using PyTorch, achieving an impressive 90.36% accuracy and 0.9748 ROC-AUC score for robust performance.
- Improved model interpretability through detailed evaluation using confusion matrix, F1-score, precision-recall curves, and Grad-CAM to validate and visualize prediction performance.

SKILLS

Languages: Python, Java, Swift, C, HTML-CSS, JavaScript, R

Frameworks: FastAPI, Streamlit, Flask, Pydantic, React, Hugging Face Transformers, Langchain

Libraries & Toolkits: PyTorch, TensorFlow, Scikit-learn, Matplotlib, Seaborn, OpenCV, SQLAlchemy

Databases: MySQL, PostgreSQL, Amazon S3, Firebase, Supabase

Developer Tools: AWS, Linux, Git-Github, Docker, Postman, Google Colab, Matlab, VS Code, Power BI

Soft Skills: Problem Solver, Effective Communicator, Analytical Thinker, Collaborative Team Player, Time-Efficient

COURSEWORK

Computer Science: Object Oriented Programming, Database Management System, Computer Networks, Operating Systems, Data Structures, Algorithms, Software Engineering, Automata Theory, Amazon Web Services

Data Science & AI: Data Analysis, Data Warehousing and Mining, Data Visualization, Machine Learning, Deep Learning, Artificial Intelligence, Digital Image Processing, Computer Vision

Mathematics: Statistics, Probability, Linear Algebra, Vector Calculus, Differential Equations, Discrete Mathematics