Aditya Kumar Singh

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Education

VIT-AP University
B.Tech in Computer Science Engineering — 8.53/10 *Aug. 2022 – Jul. 2026*

Projects

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
- Enhanced interpretability with a confusion matrix, F1-score, PR curves, and Grad-CAM for performance validation

Brain Tumor Segmentation Using U-Net | *OpenCV, TensorFlow* Mar. 2025

- Developed a U-Net-based deep learning model for brain tumor segmentation from MRI scans using TensorFlow and Keras
- Attained 98.27 accuracy and 0.8492 AUC-ROC by applying advanced image preprocessing and model tuning techniques
- Evaluated model performance through F1-score (0.6247), precision (0.5591), recall (0.7076), and confusion matrix visualization

Pedestrian Detection from Drone View | *OpenCV, TensorFlow, Pytorch* Jan. 2025

- Designed an advanced computer vision model for drones to strengthen surveillance and public safety
- Integrated deep learning techniques, including CNNs, to refine object detection and tracking accuracy
- Implemented state-of-the-art models like YOLO and SSD, utilizing TensorFlow and PyTorch for development and training

Neural Network for Handwritten Digit Recognition | *Numpy, Pandas* Dec. 2024

- Implemented a neural network from scratch using NumPy to classify handwritten digits from the MNIST dataset, achieving high accuracy
- Developed forward and backward propagation functions with ReLU and Softmax activation, fine-tuning parameters via gradient descent
- Designed an evaluation pipeline with one-hot encoding, accuracy tracking, and Matplotlib-based visualization of predictions

Skills

Languages: Java, Python, Swift, JavaScript, C, HTML/CSS, R, MySQL
Frameworks: Pytorch, Tensorflow, Flask, Streamlit, FastAPI
Developer Tools: Git, Docker, Google Colab, VS Code, XCode, PyCharm, IntelliJ, Matlab
Libraries: pandas, NumPy, Matplotlib, OpenCV, SwiftUI
Soft Skills: Effective Communicator, Analytical Thinker, Collaborative Team Player, Adaptable and Time- Efficient

Coursework

Computer Science: Object Oriented Programming, Database Management System, Computer Networks, Operating Systems, Data Structures, Design and Analysis of 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 and Probability, Linear Algebra, Vector Calculus, Differential Equations, Discrete Mathematics