SIDAK DEEP SINGH

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SUMMARY

Can’t carry a tune, but happily carry 100 million CNN parameters. Build ML and software solutions using Python, PyTorch, TensorFlow, MERN, Docker, RESTful APIs, and Agile practices. Code sings louder than any voice. Enjoy brainstorming ideas and turning them into reality.

EXPERIENCE

Machine Learning Intern 2025-05 - 2025-07
VIT UNIVERSITY • Chennai, India

- Engineered and benchmarked sparse convolutional neural networks (CNN) with orthogonal initialization and adaptive per-channel activations in PyTorch.
- Optimized accuracy-sparsity trade-offs through extensive ablation studies and hyperparameter tuning on CIFAR-10/100.
- Achieved 84% activation sparsity and 62% accuracy on CIFAR-10 with a novel adaptive sparseinitialization.

EDUCATION

B.Tech.. CSE (Specialization in A.I. & Robotics) 2023-08 - 2027-06
Vellore Institute of Technology • Chennai, India
AISSCE 12th 2019-04 - 2023-05
G.D. Goenka Public School • Lucknow, India

SKILLS

Python • Go • C/C++ • JavaScript/TypeScript • Java • Pandas • Scikit-learn • PyTorch • Tensorflow • OpenCV • Qt • MongoDB • MySQL • Docker • Git • REST APIs • MatPlotLib • Transformers • FastAPI • PostgreSQL • Kubernetes • MERN • Model Training • Neural Networks • Data Preprocessing

PROJECTS

Multi-Modal AI Chatbot Backend & UI
Technologies: React, FastAPI, Python, PyTorch, HuggingFace Transformers, Whisper, CLIP, Groq Vision API, httpx, Reac

- Built and deployed a chatbot handling text, image, and audio using LLM and vision models.
- Implemented real-time streaming, robust file validation, and direct cloud inference via Groq Vision API.

- Designed a modern React UI (drag-and-drop, in-browser audio recording) fully integrated with aReactCORS-FastAPI backend.

Mood Analyser and Playlist Generator

Technologies: React, Node.js, Express, MongoDB, Chart.js, Spotify API, Styled-Components, Mongoose

- Developed a full-stack app to log user moods, visualize trends, and create Spotify-based playlists.
- Engineered interactive mood tracking, user authentication, live charting, and multi-API playlist generation.• Designed scalable REST APIs, robust backend models, and seamless third-party integrations for enhanced UX.

BeMyVision-Environmental Captioning for the Blind

Technologies: Python, Streamlit, OpenCV, NumPy, Pillow, PyTorch, Transformers, pywin32, pytesseract, Deep Learning

- Prepared a real-time image captioning system using BLIP and YOLOv3 models. Integrated text-to-speech conversion and OCR for reading text aloud. Built a Streamlit interface for live video feed, object detection, and captions.

Parallel Search using OpenMP

Technologies: C++, Qt, OpenMP

- Implemented a parallel search algorithm with OpenMP to optimize CSV file processing decreasing search time by 30%. Developed a Qt-based GUI for efficient file handling and performance visualization.