Bhuvan Sai Anusuri

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Education

Stony Brook University Stony Brook, NY
Master's in Engineering Artificial Intelligence Expected May 2027
Coursework: Practical Machine Learning and Artificial Intelligence, Deep Learning Algorithms and Software, Introduction to AI, Statistical Learning, Fundamentals: Machine Learning

SRM Institute of Science and Technology Chennai, India
Bachelor of Technology in Artificial Intelligence **(CGPA: 8.33/10.00)** Sep 2021 – Aug 2025
Coursework: Neural Networks and Machine Learning, Database Management Systems, Deep Learning Techniques, Analysis and Design of Algorithms, Foundation of Data Analysis, NLP, Operating System Design.

Professional Experience

Coincent – Artificial Intelligence Intern (Remote) Nov 2022 – Jan 2023

- Developed a Convolutional Neural Network (CNN) to classify **70,000** grayscale images from the Fashion MNIST dataset into **10 fashion categories**.
- Preprocessed data and built a model using convolutional, pooling, and fully connected layers, trained with the **Adam optimizer** and **categorical cross-entropy loss.**
- Achieved high classification accuracy while applying deep learning concepts such as model evaluation and overfitting prevention.

Research Experience

Research Assistant – SRMIST

DenseNet-Transformer: A Hybrid Architecture for Human Action Recognition Aug 2024 – Dec 2024

- Proposed a hybrid DenseNet-Transformer model combining spatial feature extraction and temporal sequence modeling for improved video action recognition.
- Achieved **93.75% accuracy on UCF-101** and **87.5% accuracy on Kinetics**, outperforming baseline Transformer and CNN models.
- Optimized large-scale training on NVIDIA RTX 3090 with extensive hyperparameter tuning, ensuring robustness and adaptability across diverse video datasets.

Automated Human Recognition and Activity Detection (AHAR-Net) Jan 2025 – Apr 2025

- Designed and implemented **AHAR-Net**, a real-time video-based human action recognition system integrating **YOLO** for detection and **DeepSORT** for multi-object tracking.
- Utilized **DenseNet** for spatial feature extraction and **Transformer architectures** for temporal modeling to accurately recognize complex human activities.
- Optimized the end-to-end pipeline for robust performance in **surveillance** and **sports analytics**, and presented the results at a conference.

Academic Projects

Smart Diet Recommendation System Jun 2025 – Aug 2025

- Built an **M**L-based diet recommendation system over **500K+ recipes** using **k**-NN with cosine similarity, achieving **95% budget accuracy** and **156ms** average query latency.
- Developed a **s**calable microservices architecture using **FastAPI and Streamlit**, **Docker containerization**, and **cloud deployment on Hugging Face Spaces** for real-time inference.
- Implemented a **b**udget-aware meal planning module integrated with a **TinyLlama-1.1B LLM** for **conversational AI assistance** and automated shopping list generation, maintaining a 2.30/day cost deviation.

Fine-Tuning Mistral-7B for a Domain-Specific Cooking Assistant with RAG Sep 2025 – Dec 2025

- Fine-tuned **Mistral-7B-Instruct** using **QLoRA (4-bit LoRA quantization)** to build a lightweight, domain-adapted cooking assistant under constrained GPU resources.
- Curated and preprocessed a high-quality **instruction-style culinary dataset** and implemented a custom **PyTorch training loop** for efficient supervised fine-tuning.
- Achieved strong domain adaptation by reducing **validation perplexity from 49 to 2.36** and enhanced factual grounding using **RAG** with **Sentence-BERT** embeddings and **FAISS**.

Technical Skills

Programming Languages: Python, SQL, C/C++, HTML, CSS, JavaScript.
Libraries: Scikit-learn, NumPy, Pandas, Matplotlib, Seaborn, NLTK, Transformers, Sentence-BERT, FAISS.
Frameworks : TensorFlow, Keras, PyTorch, LangChain, LlamaIndex, Streamlit, FastAPI.
Tools and Data Platforms: VS Code, Git/GitHub, Docker, Jupyter Notebook, Hugging Face Spaces.

Publications

- **DenseNet-Transformer Model: A Hybrid Architecture for Improved Human Action Recognition in Videos** – Published in IEEE Conference. Link
- **Automated Human Recognition and Activity Detection (AHAR-Net): A hybrid framework combining YOLO, DeepSORT, DenseNet, and Transformers** – Accepted at ICCCNT 2025. Link
- **Detection of Elusive Polyps using U-Net for Polyp Segmentation** – Accepted at ICRAECC 2025. Link