Praveen Gautam

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Education

Indian Institute of Science **Aug 2023 – Present**
MTech Artificial Intelligence — CGPA: 7.9 *Bangalore, India*

Pulchowk Campus, Tribhuvan University **Nov 2017 – May 2022**
Bachelor in Electronics and Communication Engineering *Lalitpur, Nepal*

Relevant Coursework

- Linear Algebra
- Machine Learning
- Stochastic Models
- Advanced Image Processing
- Computer Vision
- Data Analytics

Experience

Studypool **Dec 2021 – May 2023**
Tutor *Remote*

– Helped students with Machine Learning, Mathematics, and Programming (Python, MATLAB).

Projects

- **Video Quality Assessment using multimodal Vision Language Models** May 2024 – Present
  – **MTech project (VIP Lab under Prof. Rajiv Soundararajan)**
    * Developed a multimodal deep learning framework for video quality assessment using a frozen image encoder (ViT), pre-trained large language models (LLMs), and a trainable Querying Transformer (Q-Former).
    * The model outputs the vision-language embeddings, which are regressed with MOS to get a quality score.
  – **Finetuning Video/Audio QA models (In collaboration with LG)**
    * Benchmarked Video/Audio quality assessment models like FAST/FASTER-VQA, NISQA, NORESQA, etc.
    * Fine-tuned the model with different architecture change, loss functions, normalizations to obtain precision and recall of 0.9 on detecting glitches on Video/Audio.
- **Developed a Video Search Model using a Multimodal LLM and RAG pipeline** Apr 2025 – May 2025
  – Generated textual descriptions for each video using multimodal LLM. Stored embeddings of these descriptions in a FAISS vector database. At query time, user input is embedded using the same model and matched via vector similarity to retrieve relevant videos.
- **Natural Language Processing** Mar 2024 – Oct 2024
  – Developed a Seq2Seq model (LSTM, GRU) with attention, teacher forcing, and beam search for date format translation, achieving 95% accuracy.
  – Designed and tested three model architectures (DAN, Bi-LSTM, Bi-GRU with attention) using word embeddings (GloVe, Word2Vec) on the IMDb review dataset.
- **Basic ML Algorithm Implementations** Feb 2024 – Apr 2024
  – Implemented Linear/Logistic Regression, Bayes Classifier, Gaussian Mixture Model, Decision Trees, Random Forest, and AdaBoost from scratch.

Technical Skills

- **Languages**: Python, C/C++, MATLAB
- **Frameworks**: PyTorch, TensorFlow, Keras, Git

Honors and Awards

– **Diligent Student Award (2015–2017)** – Recognized for consistently outstanding academic performance.
– **Finalist, *"College Idea Hunt"*** – Presented an innovative piezoelectric sole concept for harvesting energy in the competition organized by Idea Studio, Nepal.

Volunteer Experience

– Organized *"Dronacharya,"* a drone competition where participants navigated drones to reach designated endpoints.