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Education

Indian Institute of Science, Bangalore

M.TECH. IN COMPUTER SCIENCE AND AUTOMATION

CGPA: 7.2 / 10

Bengaluru, Karnataka

2022 - 24

Rajiv Gandhi University of Knowledge and Technologies , Nuzvid

B.TECH IN COMPUTER SCIENCE AND ENGINEERING

CGPA: 8.99 / 10

Krishna, Andhra Pradesh

2018 - 22

Skills

Technical Skills:

Python, PyTorch, Tensorflow, scikit-learn, LaTeX, C, JAVA, ONNX, TensorRT, SNPE,Quantization

Machine Learning Skills:

Natural Language Processing, Representation Learning , Computer Vision , Recommendation Systems

Experience

Data Scientist

NETRADYNE

Bangalore

July 2024 - Present

• Traffic Violation Analysis :

Developed a real-time traffic light and sign violation detection system using CNN across various locales, achieving a precision improvement of 15% in traffic light violations and 5% in sign violations over the existing system.

• Collision Warning:

Enhanced Pedestrian Collision Warning System by integrating segmentation capabilities into YOLOv5 architecture, enabling road vs non-road surface detection. Created custom training dataset using MaskFormer, implemented a multi-head model with three-class segmentation (road, sidewalk, background), and developed intelligent collision suppression logic based on pedestrian positioning. Improved existing system precision by 15% while reducing false positives.

• Text-to-Image Retrieval:

Built a system to retrieve relevant images based on textual queries, useful for data mining applications. Leveraged a CLIP-based model to generate image embeddings and stored them in QuadrantDB for efficient access. Implemented a dual-query approach using both positive and negative text inputs, combined their embeddings linearly, and retrieved top-K matching images using cosine similarity.

• MLFlow :

Implemented and managed an MLflow setup for efficient model training and tracking across multiple models.

Graduate Research Student

MACHINE LEARNING LAB @PROF. CHIRANJIB BHATTACHARYYA, IISC & SONY RESEARCH INDIA

Master's Final Project

Jan 2023 - June 2024

• Visual Storytelling:

Visual storytelling involves automatically generating a humanlike and coherent short story from a sequence of images.I have used ViT+GPT-2 & BLIP extracts captions describing the content of an image.These captions are fed into large language models like BART, T5, & Llama2 to generate better coherent narratives.

• Video Storytelling:

The goal is to create coherent, human-like, imaginative, and concise stories for videos that encompass entire events. I used PGL-SUM to extract the best frames from videos and fed them into a visual storytelling model to generate narratives. For this work, I received an academic research fellowship from Sony Research India.

• Social Story Generation :

It involves generating social story for Autism children in sequence of images along with instructions. I have created new dataset using OpenAI API then I fine-tuned Llama2-7b & used Stable-Diffusion-SDXL-Turbo to generate stories with images.

Projects

Deep Representation Learning

COURSE: ADVANCED DEEP REPRESENTATION LEARNING

M.Tech Course Assignment

August 2023

• Variational Auto Encoders:

Implemented VAE and Beta-VAE for image datasets like Animal Faces.Configured VAE with varying number of latents, assessing generated and reconstructed images.

• Generative Adversarial Networks:

Implemented DC-GAN , Conditional-GAN & Bi-GAN to generate realistic animal faces using a Animal Faces dataset.Utilized label information as a conditional element to control the attributes of generated images.

• Self Supervised Learning :

Implemented MoCo (Momentum Contrastive Representation Learning) with different augmentations of data and achieved 10% more than full blown CNN .

Natural Language Processing

COURSE: DEEP LEARNING FOR NATURAL LANGUAGE PROCESSING

M.Tech Course Assignment

August 2023

• Sentiment Analysis:

Designed five different model architectures using DAN, Hierarchical Attention, CNN, GCN , Bi-LSTM , Bi-GRU & BERT with word embedding such as GloVe , FastText and achieved test accuracy of 92.45% on Movie Review dataset.

• Neural Machine Transliteration :

Designed a Seq2Seq model enriched with Attention Mechanism, teacher forcing, and beam search for transliterating words from English to Hindi, attaining an accuracy rate of 89%.Visualized the effect of attention on source sequence

• Recommendation System :

Designed Neural Collaborative Filtering from scratch for recommendations on MovieLens Dataset, obtained 0.399 NDCG Score.

Courses Taken

Advanced Deep Representation Learning

Deep Learning for Natural Language Processing

Applied Linear Algebra & Optimization

Machine Learning

High Performance Computer Architecture

Deep Learning

Probability and Statistics

Design and Analysis of Algorithms

Compiler Design