Ambesh Shekhar

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EDUCATION

BIT MESRA
B.E. in Computer Science and Engineering
Expected May 2020

COURSEWORK

UNDERGRADUATE

Fundamental of Data Structure
Object Oriented Programming
Advanced Design and Analysis of Algorithms
Artificial Intelligence
Operating Systems
Database System
Computer Networks
Computer Structure and Architecture
Software Engineering
System Programming
Compiler Designs and Principles
Computer Graphics and Design
Software Project Management

INDEPENDENT

Machine Learning Course (Coding Blocks)
CS 229 Machine Learning
CS 230 Deep Learning
Natural Language Processing Tensorflow (Coursera)
Improving Deep Learning Network(Coursera)
Sequence Model(Coursera)

SKILLS

PROGRAMMING

C/C++ • Python • Java • R • Android • Dart • Javascript

SCIENTIFIC LIBRARIES

Keras • Tensorflow • Pytorch • Scikit-learn • Pandas • Numpy • NLTK • Librosa • OpenCV

SOFTWARE AND TOOLS

PyCharm • Arduino • Raspbian • Flutter • Android • MATLAB

PERSONALITY SKILLS

Leadership • Communication • Management • Team Work

RESEARCH WORK

MemSem: A Multimodal framework for sentiment analysis

Feb 2020 - May 2020

MemSem is a neural network project which determines the sentiment analysis of posted memes.

- Based on Multimodal neural network(Visual and Textual).
- Works on images and OCR extracted text from memes.
- Trained on multimodal network of VGG19 and BERT-based model.
- Determines sentiment of memes.

QuesBELM: A BERT based Ensemble Language Model

March 2020 - May 2020

QuesBELM is a natural question answering system that can help in answering to any queries. It uses ensemble methods and application of BERT models.

- Based on Ensemble neural network architecture.
- Comprises of BERT-base , BERT-large and ALBERT-XXL fine tuned on SQUaD.
- Trained on Google's Natural Question Dataset which consists of queries from google and respective article to the query from wikipedia.
- The system provides better results compared to its predecessor like A BERT Baseline for the Natural Questions

PROJECTS

Pothole Detection

Pothole Detection is full scale ML engine for real-time pothole detection. Working on the con- currency issue in the RCNN and increasing the accuracy of the output.

- Based on Masked-RCNN.
- Captures images using Raspberry-Pi and processes those images.
- Predicts pothole in the way by using trained model deployed using AWS sagemaker.

ASL-Classifier

A python script that utilizes the OpenCV and keras libraries to classify correct sign langugae

- Uses images of American Sign Languages and ConvNet architecture.
- Trained on preprocessed dataset and validated on self captured dataset.
- Uses methods of OpenCV to create user interface to test on real-time dataset.

hiLyted

A video highlights creator, clips video from the given input by performing acoustics analysis

- Downloads audio and video using youtube-dl.
- Uses Librosa to extract audio data and sample rate.
- Calculates and finds the right short time energy occurred in a 5 second window.
- Clips the video of that duration and concatenate all the video into a single one using MoviePy.
- Stores the highlighted video in local directory.

LANGUAGE

- Native Hindi
- Advanced English
- Basic French

AREAS OF INTEREST

Natural Language Processing • Computer Vision • Speech Analysis • Machine Learning • Robotics • Algorithms

ACHIEVEMENTS

- 2nd Position in Internal Hackathon for SIH-2020

ONGOING PROJECTS

Visual Question Answering System

A python script, able to answer the question using COCO dataset from visualqa.org using the application of transfer learning and multi-modality.

Map of Characters

A framework built with neo4j and python to describe the relations among characters in story given corpora using methods of Graph database, NER and NLP.

Social Distancing

Surveillance on crowd to detect distance between individuals using UAV device and embedded electronics, and computer vision methods.

EXPERIENCE

Research Assistant | Birla Institute of Technology, Mesra

JAN 2020-Present

Working under Professor Smita Pallavi on the applications of deep learning and computer science