Chiranjeev

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Education

- **Indian Institute of Technology Jodhpur** — Jodhpur
  Doctor of Philosophy; CGPA: 8.65 — *July 2021 - Present*
- **Bharati Vidyapeeth's College of Engineering** — New Delhi
  Bachelor of Technology in Computer Science Engineering; CGPA: 8.46 — *July 2021*
- **MCL SBM Senior Secondary School** — New Delhi
  CBSE XII; Percentage: 89.2 — *May 2017*
- **DAV Public School** — New Delhi
  CBSE X; CGPA: 9.6 — *March 2015*

Publications

- **"Native Accent Sensitive Voice Cloning Using Pairwise Ranking Based Decoder Models", Mechatronic Systems and Control Journal**
- **"Rendering 3D Textured Model from Single 2D Image" - submitted in Computational Visual Medial Journal**

Experience

- **Indraprastha Institute of Information Technology Delhi** — New Delhi
  Research Intern — *May 2020 - July 2020*
  Mentor : Dr. Vikram Goyal
  - Research project based on predicting the traffic congestion on Delhi roads.
  - Used Delhi Transport Corporation data set for analysing the traffic jam.
  - Plotted various graphs relating to time dimension vs location(roads) for better visualization and analysis.
  - Used various machine learning and deep learning techniques for predicting traffic congestion such as Hidden Markov Model, Bayesian Network, LSTM networks, Clustering Algorithms such as K-means. Finally, got best results with LSTM netwokrs.
- **Indraprastha Institute of Information Technology Delhi** — New Delhi
  Research Intern — *June 2019 - August 2019*
  Mentor : Dr. Vikram Goyal
  - Research project based on Analyses on Spatial temporal data and applying Deep learning algorithms to predict the arrival time of DTC buses on bus stops.
  - Analysed data collected through GPS installed in DTC buses.
  - Generated graphs and histograms for proper visualization of routes and timings of buses.
  - Used QGIS software to plot the routes of buses on Delhi map.
  - Applied LSTM networks on spatio-temporal data which is similar to time series problem.
- **DSC BVP** — New Delhi
  RNIS-ML Executive — *August 2019 - August 2020*
  - Developer Students Club(DSC) is an active society which works in delivering knowledge to students by taking various workshops and organizing events.
  - Taught python and Machine Learning concepts to the students.

Projects

• Attack and Explainability in Audio Classification Model
Our goal was to gave an overview of an audio classification model. Tried to perform classification to predict the person's gender and accent through audio and analyzing how bias affects the training. Analysed the robustness of the model by attacking it using various targeted and non-targeted attacks such as FGSM, PGD to see how well attacks used in image domain performs in audio domain and tried to mitigate it as well. Finally we tried to come up with an explanation in audio domain so as to give meaningful explanations for the classification predictions given by model with the help of LRP and GradCAM in-order to detect where the model is focussing.
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• Disguised Face Recognition
Worked on research problem related to face verification through the faces which are occluded through various occlusion types like mask,sunglasses,caps. Porposed Model which can help in verifying Probe Disguised face with Gallery face using proposed Neural Network Architecture on DFW2019 Dataset.

• Deep Audio Steganography
Created a Neural model in which can hide secret audio inside another cover audio using Mel-spectrogram of both the audios through Encoder Network. Here the encoder returned audio resembles similar to the cover audio so that person/intruder can't detect that there is something hiddden in the Encoder given audio. Through Decoder Network extracted mel-spectrograms of both the audios: secret audio and cover audio back from content-audio (cover audio+secret audio) encoded by Encoder model. Then use Griffinlim Vocoder to generate the secret audio-back.

• Neural Architecture Search(NAS) for Fashion-MNIST data
Find best Neural Architecture for Fashion-MNIST dataset by using through Reinforcement Learning and Evolutionary Neural Architecture Search(NAS). Found the best model from search space by creating population and using selection, cross-over and mutation like appporaches for intelligent search through the fitness value obatined using specific fitness function. Fitness Function was designed in-order to obtain the good performance with less number of parameters.

• Accent Sensitive Voice Cloning System
Built a Novel method for Voice cloning system which can clone one's voice with only few voice samples as input. Worked on Indian English and American English voice data.This research proposes a generative decoder model which aims to clone the user's voice whilst capturing the native accent and linguistic features of the speaker to provide a naturalized synthesized output voice.

• DTC buses arrival time prediction on bus stops
Collected and Analysed the dtc bus data which is basically a spatio-temporal data.Visualized the routes of DTC buses using QGIS software on Delhi map and generated various graphs and histograms to analyse the the various features of data and generate some new features. Applied LSTM networks to predict the arrival time of dtc buses on bus stops.

• Intelligent Parking System
Developed a solution to find the parking spot in huge parking lots using Computer Vision and Convolutional Neural Networks .Person can also prebook the parking slot digitally through phones.Used CV to determine the parking spots using edge detection technique and recognize the number plate for the registry when the car enters the parking lot and CNN to find whether the parking slot is empty or filled.

• **Rendering 2D texture onto 3D model**
Developed a Novel approach to render self created textures onto 3D models using Machine Learning and Image processing.Created cluster based approach which resulted out to be the more efficient as it takes less computation power and less time to render texture.

Achievements And Certifications

- Qualified GATE-2021 with 96.14 percentile
- Won the internal hackathon on Smart India Hackathon-2020 organized by BVCOE.
- Semi-finalist in coding competition CodeGladiators2020.
- Top 10 among five thousand teams in Jio CG AI-19 Hackathon.
- SUMMER SCHOOL ON AI Assisted Data Analytics-2019
- WINTER SCHOOL ON AI-2019: Organized by the Infosys Center for Artificial Intelligence at IIIT Delhi
- Coding Ninjas-2018: Course of Data Structures and Algorithms in C++

Groups

• **ML.India** August 2019 - August 2020
Volunteer

• **DSC BVP** August 2019 - August 2020
RNIS-ML Executive

References

• **Prof. Mayank Vatsa**
Professor - CSE Department, IIT Jodhpur

• **Prof. Richa Singh**
Professor and Head of the Department(CSE), IIT Jodhpur