Vishesh Mittal

+91-7507133353 | 2019vishesh.mittal@ves.ac.in | linkedin | github | vishesh-mittal.github.io

Education

Vivekanand Education Society's Institute Of Technology Aug 2019 - May 2023

University Of Mumbai, Bachelor of Engineering: Computer Engineering *CGPA 9.67/10*

Relevant Courses: *• Artificial Intelligence • Probabilistic Graphical Models • Machine Learning • NLP • Data warehouse and Data mining • Cryptography & System Security • Discrete Structures and Graph Theory • Quantitative Analysis • Blockchain*

Experience

Metacreation Lab for Creative-AI, Simon Fraser University, Canada Jun 2022 - Sep 2022

MITACS Globalink Research Intern: Generative Electronic Music. *Advisor: Prof. Philippe Pasquier*

- Engineered a visualization pipeline for **Music Information Retrieval** of computer-assisted composition.
- Devised and implemented **feature extraction** for MIDI files using **Jsymbolic and Mido**.
- Created a novel **T-SNE** embedding method to visualize batch-generated MIDI files from MMM(GPT2).
- Advanced Calliope research by **Integrating MidiViz**(tick-by-tick and T-SNE) for the Metacreation Lab.
- Work accepted and to be showcased under late breaking demos in ISMIR 2022.

T-Sim Lab, IIT Roorkee, India May 2021 - Aug 2021

Spark Research Intern: Spatio-Temporal mapping and prediction of measured PM2.5. *Advisor: Prof. Amit Agarwal*

- Computed 15 **hexagonal binning** to divide South Delhi region, mapped using **Here-Map API & Leaflet.js**.
- Performed EDA and interpolated data for meteorological parameters using **IDW, 2D-Kriging**.
- Built deep learning models with **CNN-LSTM** architecture achieving lowest RMSE of 11.32 ppm.

Coding Ninjas, Gurgaon, India Jan 2021 - May 2021

Teaching Assistant: Data structures and Algorithms. *Remote*

- Solved around **1k** doubts of Students in **Python** with a average rating of 4.76.
- Mentored 17 students to improved the **quality of code** and taught how to deal with TLE, WA, RTE.

Projects

Classification of Indian Sign Language | *[CODE] [Report]* | *Advisor: Prof. Nupur Giri*

- Used **Mediapipe** to collect 258 landmarks and enhanced the LSTM model accuracy to 98%.
- Built **Scaled-YOLOv4** with accuracy of 95.9% for 25 classes for ISL detection and deployed using **Streamlit**.

Customer Review Sentiment Analysis | *[CODE] [Report]* | *Advisor: Prof. Vidya Zope*

- Performed EDA to get optimum number of features with the use of NLTK and implemented **CountVectorizer** to obtain the n-gram sequences. *Best ML model: Bi-gram Multinomial Naive Bayes, 79% Acc.*
- To implement **Word2Vec**, tokenization layer was added for **Bi-directional LSTM** and for **ANN**, pre-trained text embedding with 1M vocabulary size and 50 dim. was utilized. *Best DL model: Bi-directional LSTM, 85% Acc.*

Publications

- ***V. Mittal**, S. Sasetty, R. Choudhary, and A. Agarwal, "Deep-Learning Spatiotemporal Prediction Framework for Particulate Matter under Dynamic Monitoring," Transportation Research Record: Journal of the Transportation Research Board, vol. 2676, no. 8. SAGE Publications, pp. 56–73, Mar. 17, 2022.* [PAPER][POSTER]
- ***V. Mittal**, P. Patil, A. Upadhyay, K. Madhwani and N. Giri, "Classification of ISL using Pose and Object Detection based Techniques," SmartCom-23, India, 2023.* **[Accepted]** [PAPER]
- ***V. Mittal**, R. Gonzalez, R.Bougueng, C. Shaw, P. Pasquier, "MIDIVIS: Effective Music Visualization For Exploring And Evaluating Generated Alternatives In Computer-Assisted Composition"* **[Under Progress]**

Accomplishments

- *Team of 2 is one of selected 5 teams for iHub-Data Mobility Fellowship 2022.*
- *Team of 6 (TeamId:17151) won 1st-Runner up with cash prize of 75000 INR in student innovation category at Smart India Hackathon 2022(Software Edition) out of 2,00,000+ Participating students.*
- *Selected as 1 of 500 candidates across India in 5th Summer School on Artificial Intelligence by CVIT, IIITH-2021.*
- *Selected as 1 of 120+ applicants from a out of 10000+ applications which were made for SPARK'2021 fellowships.*

Technical Skills

Languages: Python, C++, C, JavaScript. **Frameworks/Libraries**: NLTK, Flask, Node.js, Tensorflow, PyTorch
Databases: MySQL, mongoDB, Cassandra. **Platforms**: Github, Heroku, Amazon SageMaker