

# VISHESH MITTAL

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## EDUCATION

### University of Southern California

June 2023-December 2024

#### Master of Science in Computer Science (Artificial Intelligence)

Coursework: Analysis of Algorithms and Data structures, Applied Natural Language Processing, Robotics

### Vivekanand Education Society's Institute Of Technology

August 2019-May 2023

#### University Of Mumbai, Bachelor of Engineering: Computer Engineering,CGPA:9.34/10

Coursework: Machine Learning, Software Engineering, Data warehousing and mining, Big data analytics

## TECHNICAL SKILLS

Languages: Python, C++, C, JavaScript

Web Tech: RestAPI , Flask, Node.js

Libraries:TensorFlow, PyTorch, Sci-kit Learn, Pandas, NumPy, Selenium

Databases: MySQL, MongoDB

## INTERNSHIP EXPERIENCE

### Research Intern: Generative Electronic Music, Advisor: Prof. Philippe Pasquier

June 2022-September 2022

Metacreation Lab for Creative-AI, Simon Fraser University, Vancouver, Canada

- Engineered a visualization pipeline for Music Information Retrieval of computer-assisted composition with a team of three
- Devised and implemented feature extraction for over 1k+ features in 400k+ files leveraging Jsymbolic and Mido libraries
- Developed and executed a T-SNE embedding method to visualize and analyze batch-generated files from an MMM (GPT-2) model, enabling efficient processing of up to 10k files simultaneously
- Deployed the Calliope research project, focused on visualizing batch generation of 100+ new MIDI generations at once; research findings were accepted for showcasing in prestigious late-breaking demos at ISMIR 2022

### Research Intern: Spatio-Temporal mapping of PM2.5, Advisor: Prof. Amit Agarwal

May 2021-August 2021

T-Sim Lab, IIT Roorkee, Roorkee, India

- Implemented 15 hexagonal bins in Delhi using Leaflet.js, surpassing previous 4-sensor system, optimizing data utilization
- Automated web scraping using Selenium and BeautifulSoup, performed EDA on retrieved features, and employed interpolation techniques to enhance spatial resolution of six key data features
- Built deep learning models with CNN-LSTM architecture achieving lowest RMSE of 11.32

### Teaching Assistant: Data structures and Algorithms

January 2021-May 2021

Coding Ninjas, Gurgaon, India, Remote

- Solved around 1k doubts of Students in Python with a average rating of 4.76/5
- Mentored 17 students to improved quality of code and taught how to deal with TLE, WA, RTE

## ACADEMIC PROJECTS

### Spatiotemporal Forecasting and Optimal Path Nav., [CODE], Advisor: Prof. Nupur Giri

August 2022-May 2023

- Created DIVE (Dataset for Indian Vehicular Evaluation) dataset for Mumbai-Navi Mumbai road network with 40 nodes, utilizing TomTom API, AWS API Gateway, EC2, and Amazon Relational Database Service
- Optimized and benchmarked STGCN, SSTGNN, DCRNN, and A3TGCN models on DIVE dataset, achieving a record low MAE of 0.614. Surpassed MAE of PeMSD7 and PeMSD8 datasets. Research findings submitted for publication and under review

### Classification of Indian Sign Language(ISL), [CODE], Advisor: Prof. Nupur Giri

August 2021-May 2022

- Created Mediapipe embeddings of 258 dimension 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

## PUBLICATIONS

- V. Mittal, et al. "Deep-Learning Spatiotemporal Prediction Framework for Particulate Matter under Dynamic Monitoring," TRR: Journal of the Transportation Research Board, vol. 2676, no. 8. SAGE Publications, pp. 56-73, Mar. 17, 2022
- V. Mittal, et al. "Classification of ISL using Pose and Object Detection based Techniques," SmartCom-23, India, 2023

## ACCOMPLISHMENTS

- Led a team of two selected from five chosen teams for the iHub-Data Mobility Fellowship 2022
- Led a team of six to 1st Runner-Up in student innovation category at SIH '22 among 200,000+ participants
- Shortlisted as 1 of 500 candidates across India in 5th Summer School on Artificial Intelligence by CVIT, IIITH-2021
- Shortlisted as 1 of 120+ applicants from a out of 10000+ applications were made for SPARK'2021 fellowships