

EDUCATION

USC Viterbi School of Engineering

Masters in Computer Science, GPA: **4.0**

Los Angeles, CA

2021–2023(expected)

- Relevant Courses - Multimodal Learning for Human Communication, Deep Learning

BITS Pilani-K. K. Birla Goa Campus

B.E. in Computer Science, GPA: **9.75**/10

Goa, India

2017–2021

- Relevant Courses - AI, ML, Data Mining

EXPERIENCE

Dragonfruit AI, Inc

Machine Learning/Software Internship

Menlo Park, CA (Remote)

May 2022-Aug 2022

- Added monitoring capabilities to the **Video Upload and Detection** pipeline using **Prometheus** metrics in Python and Golang.

MIT Media Lab

Undergraduate Thesis at Fluid Interfaces group

Massachusetts, USA (Remote)

June 2020-June 2021

- **Human-in-the-Loop ML** for behaviour change interventions, using **sequence modelling** and **Reinforcement Learning (RL)**.
- Personalizing pretrained Deep Learning image encoders with **weight imprinting**, **spatio-temporal attention**, and **self-supervised** techniques

Biologically Inspired Neural Network (BINN) Labs, BITS Pilani - Goa

Undergraduate Research Project

Goa, India

Aug 2019-May 2020

- Implemented a **neural mass model** to simulate the behaviour observed by the Thalamocortical Visual Pathway in the brain using Python and MATLAB

Happiest Minds Technologies

Machine Learning Internship

Bengaluru, India

May 2019-July 2019

- Implemented and trained **image-to-image translation GANs**, as well as **object detection** models to automatically place a product in a video.

PUBLICATIONS

- Mina Khan, P Srivatsa, **Advait Rane**, Shriram Chenniappa, Rishabh Anand, Sherjil Ozair, Pattie Maes (2021) Pretrained Encoders are All You Need. [arXiv:2106.05139](https://arxiv.org/abs/2106.05139).
- Mina Khan, P Srivatsa, **Advait Rane**, Shriram Chenniappa, Asadali Hazariwala, Pattie Maes (2021) Personalizing Pre-trained Models. [arXiv:2106.01499](https://arxiv.org/abs/2106.01499).
- Mahajan P, **Rane AP**, Sasi S, Bhattacharya BS (2020) Quantifying Synchronization in a Biologically Inspired Neural Network. [arXiv:2012.06112](https://arxiv.org/abs/2012.06112).
- Mahajan P, **Rane AP**, Sasi S, Bhattacharya BS (2020) Phase Synchronisation in a thalamocortical neural mass model. Bernstein Conference 2020. doi: 10.12751/nncn.bc2020.0191.(Poster)

PERSONAL/COURSE PROJECTS

- **Prototype Bottleneck Model** May 2022
Developed a **data-efficient inherently interpretable** deep learning model by combining **bottleneck models** with **small auxiliary concept datasets** to learn concept prototypes and make final predictions through a bottleneck.
- **Biases and Unfairness in Emotion Recognition Models** May 2022
Evaluate **biases and unfairness** in **Multimodal Emotion Recognition** models across subjects of two nationalities in the SEWA database using fairness metrics and evaluate **debiasing** by dropping modalities in late fusion.
- **Safe Meta Reinforcement Learning** Jan 2022
Identifying **unsafe** conditions arising due to causal variations in train and test tasks using information theoretic measures in gradient updates.
- **Safe Navigational Assistance for Visually Impaired Persons** Dec 2021
Simulated a wearable device that detects obstacles and directs the user to avoid collisions using **Unity** and **Computer Vision techniques**. Evaluated the wearable device against Signal Temporal Logic **safety requirements**.
- **Visual Perception of the Colour Spectrum** Dec 2019
Leveraged **neural networks and gradient-boosted decision trees** to classify EEG data from subjects viewing colours through a VR headset

SKILLS

- Software: **Python, TensorFlow/Keras, PyTorch**, pandas, sk-learn, C/C++, Java, Javascript, Golang, Linux shell, MATLAB, ModelSim Xilinx, \LaTeX , Unity

TEACHING

- **Undergraduate Teaching Assistant** at BITS Goa, CSIS Department Aug 2019-Dec 2019
Discrete Structures for CS (CS F222)
- **Undergraduate Teaching Assistant** at BITS Goa, CSIS Department Jan 2020-May 2020
Computer Programming (CS F111)
- **Grader** at USC Viterbi, CS Department Jan 2022-May 2022
Analysis of Algorithms (CSCI 570)
- **Course Producer** at USC Viterbi, CS Department June 2022-Aug 2022
Analysis of Algorithms (CSCI 570)
- **Teaching Assistant** at USC Viterbi, CS Department Aug 2022-Dec 2022
Fundamentals of Computation (CSCI 102)

SCHOLARSHIPS AND AWARDS

- Admitted to the MS CS Honors Program at USC Viterbi 2022
- Ranked 2nd in batch, BITS Goa 2017-2021
- 4 consecutive BITS Goa Merit Scholarships, Semesters 2 to 5 – top 1 percent BITS Goa 2018–2020