Advait Rane

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Education

BITS Pilani-K. K. Birla Goa Campus — Goa, India
B.E. in Computer Science, GPA: **9.75**/10 — 2017–2021 (expected)

- Batch rank - **2**
- Relevant Courses - AI, ML, Data Mining, DSA, OS, Computer Architecture

Experience

MIT Media Lab — Massachusetts, USA
Undergraduate Thesis at Fluid Interfaces group — June 2020-current

- PAL - Assisting habit formation with Machine Learning (ML)
- Leveraging **Human-in-the-Loop ML** for behaviour change interventions, using **sequence modelling** for behaviour patterns and **Reinforcement Learning (RL)** for context-specific interventions.

Biologically Inspired Neural Network (BINN) Labs, BITS Pilani - Goa — Goa, India
Undergraduate Research Project — Aug 2019-May 2020

- **Neural Mass Models** of the Thalamocortical Visual Pathway
- 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 — Bengaluru, India
Machine Learning Internship — May 2019-July 2019

- **GANs** for automated product placement
- Implemented and trained **image-to-image translation GANs** like **GANimorph** and CycleGAN, as well as **object detection** models like **YOLO** to automatically place a product in a video.

Cognitive Neuroscience Lab, BITS Pilani - Goa — Goa, India
Undergraduate Research Project — Jan 2019-Dec 2019

- Analysing the Visual Perception of the Colour Spectrum in the brain
- Leveraged **neural networks and gradient-boosted decision trees** to classify EEG data from subjects viewing colours through a VR headset with an **android app**

Publications

- 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 presentation)
- Mahajan P, **Rane AP**, Sasi S, Bhattacharya BS (2020) Quantifying Synchronization in a Biologically Inspired Neural Network. arXiv:2012.06112 . (Arxiv Preprint)

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*)

Skills

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

Personal/Course Projects

- **Graph Convolutional Networks** on Bitcoin transaction graphs — Aug 2019
  Implemented a **two layer GCN** to detect fraudulent transactions in a Bitcoin transaction graph, based on the paper "Anti-Money Laundering in Bitcoin: Experimenting with Graph Convolutional Networks for Financial Forensics".
- Solving the 8-puzzle problem with a **modified A* search** — Sep 2019
  Modified the A* search to expand each node with a limited BFS strategy to solve the 8-puzzle problem.
- Celebrity **face recognition** using Kaggle dataset — Nov 2019
  Implemented classifiers using sk-image and sk-learn to identify celebrity faces from a Kaggle dataset of photos.

Scholarships and Awards

- 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
- BITS Goa Merit Scholarship Semester 1 – top 2 percent BITS Goa — 2017–2018
- Ranked 1st in St. Mary's School (Boys) ICSE Board Exams with 98 percent — 2015

Extracurricular Activities

- **Captain** of the BITS Goa Basketball Team (Boys) — 2019–2020
  I led the team to two victories – 1st place in MIT Pune Summit and 2nd place in BITS Hyderabad Arena.
- Member at LDC, BITS Goa — 2017–2020
  I was a member of the Literary and Debating Club, where I adjuticated several debates and helped organise college fest events.
- Member of Pune District Basketball Team — 2014
  I was a part of the Pune District team, after winning the district-level under-16 basketball tournament
- Participant at FTC, India — 2013–2014
  I was a part of the team representing St. Mary's School at FIRST Tech Challenge national robotics challenge.