Ameya Anjarlekar

Email : ameyanjarlekar@gmail.com
Github : ameyanjarlekar

EDUCATION

- **Indian Institute of Technology Bombay** — Mumbai, India
  Bachelor of Technology in Electrical Engineering and Minor in Computer Science ; CPI: 9.57/10 (2017-2021)

RESEARCH AND TECHNICAL PROJECTS

- **DNA Sequencing Through Neural Networks** — IIT Bombay
  Guide: Prof. Manoj Gopalkrishnan (November 2018 - July 2019)
  - Developed a novel technique to estimate the **conditional probability** distribution from samples using **Kernel Density Estimation** technique applied along with Artificial Neural Networks.
  - Obtained the condition on the distribution for the test set of samples using **likelihood maximization**
  - Achieved **MAE** of around 0.2 for the range of conditional values in [10,100] with just **2000** sample points.
  - Applied the above model to develop a **state of the art** technique to correctly predict the micro-scale spatial information like the relative positions of bio-molecules without the need of **conventional optics**

- **Supervised Detection of Tennis Ball from Camera Stream** [Doc][Code] — IIT-B Mars Rover Team
  University Rover Competition(URC 2019) (Aug 2018 - present)
  - Working towards the ball detection sub-task required for target detection in autonomous operations of the rover
  - Created a dataset comprising of over 80,000 examples and refined the same using **Data Augmentation** procedures which was further used to re-train the transfer layers
  - Each test image was pre-processed using **circular hough transform** to extract certain features before forward propogation was applied on it using the derived weights
  - Devised a model algorithm for the task which comprises of using **transfer learning** on a similar big dataset available using **CNN** and further integrated it with the server using **ROS**

- **Image Reconstruction for Parallel MRI** [Report][Code] — IIT Bombay
  Guide: Prof. V.M. Gadre (September 2018 - June 2019)
  - Implemented a modified version of the GRAPPA algorithm on **SDK** for image reconstruction during **Parallel MRI** technology which would be used in the indigenous state of the art MRI machine developed at IIT Bombay
  - Estimated the dependancy of neighbouring pixels by using a modification of the linear least fit method
  - Tested the algorithm on Matlab and then implemented on Xilinx Zynq-7000 FPGA Board

- **Generalized Fractional Fourier Transform in Radar** [Report][Paper] — IIT Bombay
  Guide: Prof. V.M. Gadre, Mr. Peeyush Sahay(DRDO) (April 2019 - July 2019)
  - Developed a novel technique through which object parameters like acceleration, velocity and position of the object can be more accurately found out using existing theory of **Generalized Frequency Fourier Transform**
  - Acknowledged for improving the quality of paper published in the **Circuits, Systems and Signal Processing Journal**. Another paper on GTFT Matched Filtering to be published in National Conference on Communication.

- **Distortion Correction for Modulation Recognition using CNN** [Report]
  Guide: Sunita Saragawi/Prasanna Chaporkar (Sept 2018 - Nov 2018)
  - Studied the "RML2018.10a" dataset with the help of relevant papers and garnered vital information related to frequency analysis of a sound wave using its samples taken with respect to space and time
  - Implemented a CNN model for the frequency estimation of various signals and analyzed its performance over various Signal to Noise (**SNR**) ratio and obtained improved results over a certain range of SNR values

SCHOLASTIC ACHIEVEMENTS

- Secured an **AP** grade (awarded to less than 1% students) in course on differential equations (MA 207) [2018]
- Awarded **Undergraduate Research Award** (URA) by IIT Bombay for contribution to development of MRI [2019]
- Secured an All-India Rank **132** in **JEE - Advanced** out of selected 0.25 million students [2017]
- Secured an All-India Rank **215** in **JEE - Main** out of around 1.1 million students [2017]
- Awarded fellowship by the Indian Institute of Science (IISC), Bangalore for securing an All-India Rank of **243** in **KVPY**(Kishore Vaigyanik Protsahan Yojana)out of around 80,000 students [2017]
- Placed among the top 500 students of the nation to be selected for the **Indian National Maths Olympiad** [2015]

Link to my extended CV:
https://bighome.iitb.ac.in/index.php/s/xnc1dOmPvCWGYdb