Areas of Interest

• Data Science • Computer Vision • Algorithms and Complexity

MTech Project and Seminar

- **Scaled Topography from video sequence of Underwater Images**
  M.Tech Project, Guide: Prof. Ajit Rajwade *(May 2018 - Ongoing)*
  - Implemented feature point tracking algorithm using Siamese Convolution Neural Network
  - Explored the mathematics behind the various methods of estimating the equation of an underlying plane
  - Applied trajectories of feature points obtained from tracking algorithm to estimate the depth of underwater image in the various ground structure such as piece-wise constant or planar structure

- **Restoration of Underwater Images**
  M.Tech Seminar, Guide: Prof. Ajit Rajwade *(January 2018 - April 2018)*
  - Examined the effect of dynamic refraction on the sinusoidal wave in the distorted underwater images
  - Surveyed various water surface shape reconstruction methods such as optical flow based method, learning model-based method, and motion blur model-based method
  - Simulated video of underwater images in presence of circular ripples and mixture of circular ripples

Course Projects and Assignments

- **Multi-label Image Classification of the Amazon Rainforest**
  (CS 763: Computer Vision, Guide: Prof. Arjun Jain) *(Spring 2018)*
  - Solved the Multi-label Image Classification problem using Encoder **Convolutional Neural Network(CNN)** for the feature extraction and Decoder **Recurrent Neural Network(RNN)** for predicting actual labels
  - Explored the attention mechanisms in RNN which result in our highest F2 score of 90.25 tested on kaggle

- **Inferring Basis Mismatch in Image Representations**
  (CS 754: Advanced Image Processing, Guide: Prof. Ajit Rajwade) *(Spring 2018)*
  - Empirically in Compressed sensing, the problem of Basis mismatch occurs because of the two main reasons such as the noise or the discrete representation of bases
  - Implemented the method of Alternating Convex Search(ACS) which uses standard l_1-minimization to find the signal model coefficients followed by a maximum likelihood estimate of the signal model

- **Automatic Image Colorization**
  (CS 663: Digital Image Processing, Guide: Prof. Ajit Rajwade & Prof. Suyash P. Awate) *(Autumn 2017)*
  - Objective was to convert given grayscale image into colorized(RGB) image without any manual intervention
  - Implemented different approaches such as neural network approach, a combination of neural network and traditional image processing approach, and Convolutional Neural Network(CNN) approach

- **Credit Card Fraud Detection System**
  (CS725: Foundations of Machine Learning, Guide: Prof. Ganesh Ramakrishnan) *(Autumn 2017)*
  - Solved binary classification problem by applying various machine learning models like Logistic Regression, Support vector machine (SVM), Neural Network, Random Forest classifiers with hyperparameter tuning
  - Random Forest performed best as compared to other models with F1 score 0.9997

- **Implementation of CNN and RNN from scratch in Lua Torch7**
  (CS 763: Computer Vision, Course Assignment) *(Spring 2018)*
  - Executed the convolutional layer and implemented the backpropagation of Convolutional Neural Network(CNN)
  - Implemented forward and back propagation of single hidden layer Recurrent Neural Network(RNN)
- **Devanagari Character Recognition using Tensorflow**
  (CS 621: Artificial Intelligence, Course Assignment) *(Autumn 2017)*
  - Objective was to recognized 46 devanagari characters using Neural Network
  - Achieved 98.68% accuracy after training a single hidden layer neural network(1000 neurons) for 300 epochs

WORK EXPERIENCE

- **Cognizant Technology Solutions**
  Programmer Analyst Trainee, Chennai *(September 2015 - September 2016)*
  - **Content Management System**
    - Full-stack design and implementation for a web application using the Agile technique
    - Incorporated Kendo UI framework for the front-end functionality of a web application
    - Implemented in C# .NET using SQL Server and MVC. Managed using Team Foundation Server
  - **E-Learning Platform**
    Developed a whole module related to collecting and displaying the results of tests taken by any trainee
- **Persistent Systems Pvt. Ltd.**
  Project Intern, Pune *(June 2014 - April 2015)*
  Implementation of Seam Carving for Image Retargeting using CUDA enabled GPU
  - Developed a windows application (in Microsoft visual studio) using **CUDA C++** which reduce the size of image by content-aware image resizing algorithm called **Seam Carving**
  - Demonstrated the difference between executing the seam carving algorithm using the sequential approach on a traditional CPU and using the parallel approach on a modern CUDA enabled GPU
  - Achieved ∼**7.5X** acceleration in the execution time, GPU execution being the fastest

COURSES TAKEN

Foundations of Machine Learning	Advanced Image Processing	Artificial Intelligence
Learning Analytics and Educational Data Mining	Advanced Machine Learning	Computer Vision
Fundamentals of Digital Image Processing	Algorithms and Complexity	

TECHNICAL SKILLS

- **Languages**: C, C++, C#, Python (SKlearn, Pandas, Numpy, Matplotlib, PyTorch), MATLAB
- **Web Development**: HTML/CSS, JavaScript, JQuery
- **Tools**: Git, Microsoft Visual Studio, LaTeX

POSITIONS OF RESPONSIBILITY

- **Interview Coordinator, Placement Team IIT Bombay** *(December 2017)*
  - Assisted 7 companies in organizing interview process seamlessly during 2017-18 placements
  - Acted as Single Point Of Contact(SPOC) for 3 companies and ensured smooth functioning of interviews
- **Teaching Assistantship, IIT Bombay**
  - **CS 663: Fundamentals of Digital Image Processing**
    (under Prof. Ajit Rajwade & Prof. Suyash P. Awate) *(Autumn 2018)*
    - Worked with a team of seven other TAs to evaluate assignments, exams, and course projects
    - Assisted students to resolve their difficulties via moodle discussion forum
  - **CS101: Computer Programming & Utilization**
    (under Prof. Umesh Bellur & Prof. Krishna S) *(Autumn 2017 - Spring 2018)*
    - Mentored 14 students each semester and cleared their doubts in weekly labs
    - Evaluated graded labs, examination papers & assisted in conducting examinations of 597 students

ACHIEVEMENTS AND ACTIVITIES

- Scored **99.84** percentile in GATE 2017 CS/IT amongst 96,878 candidates *(2017)*
- Among **top 1%** of HSC(12^{th} examination) students in Maharashtra state board *(2011)*
- Ranked **2nd** in B.E. among 120 students in CSE department *(2015)*
- Secured **2nd** prize for the B.E. project in Project competition held by CSI student Chapter *(2015)*
- **Black Belt** in Shotokan Karate Style from Japan Karate Association(JKA) *(2009)*
- Participated in **5km Cycling, 4.5km Crossy running** GC at PG Sports IIT Bombay *(2017-2018)*
- **Hobbies:** Solving 9×9 Sudoku and Rubik's Cube, Watching Football matches and Anime