Rishabh Ramteke
Electrical Engineering
Indian Institute of Technology Bombay

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UG Third Year
Male
DOB: 07/06/99

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2019	7.85
Intermediate/+2	Andhra Pradesh Board of Secondary Education	Sri Chaitanya Jr. College	2017	98.20
Matriculation	CBSE	Dr. KKR' Gowtham Int School	2015	10.00

Research Experience

Attention based Graph CNN for scene classification *November 2018 - April 2019*
Guide: Prof. Biplab Banerjee | Dept. of Resource Engineering | IIT Bombay

- Classified region adjacency graph representation of images by **spatial graph convolution** networks
- Implemented Attention model in TensorFlow for **better classwise region highlights**
- Obtained **state of the art** results in scene recognition for several aerial datasets

Image Reconstruction with MRI technology *March 2019 - May 2019*
Guide: Prof. V.M.Gadre | Scan Era | Ministry of Communication & Information Technology, India

- Awarded the **Undergraduate Research Award** for this notable contribution
- Implemented a modified version of GRAPPA algorithm on SDK for image reconstruction with parallel MRI technology which would be used in the indigenous state-of-art MRI Machines
- Simulated the algorithm on Matlab and then implemented it on **Xilinx Zynq-7000 FPGA board**

Clustering white-matter fiber tracts of diffusion MRI *Dec 2019 - Jan 2020*
Guide: Prof. Ramamohanarao Kotagiri | Dept. of Information Technology | University of Melbourne

- Devised a novel algorithm for clustering white-matter fiber tracts of diffusion-weighted MRI
- This algorithm outperformed previous state of the art method and is computationally cheaper
- Improved the gray-matter region connectivity of the fiber trajectories, which were initially disconnected when estimated from tractography and were discarded in brain connectivity analysis

Improving Single and Multi-View Blockmodelling by Algebraic Simplification *Summer 2019*
Guide : Prof. Ramamohanarao Kotagiri & Peter Stuckey | University of Melbourne

- Extended **Blockmodelling** to incorporate multiple sources of information including multiple edges and node features which improved on the **state of the art** for various real datasets
- Devised new, efficient approaches to perform **pareto based optimisation** based on idea of homophily, that can find groups of nodes that are highly similar in connections and/or attributes
- Conducted experiments to benchmark performance of various architectures against previous work
- Aiming to submit the research work for **IJCAI** conference, one of the top ranked AI conferences

Technical Activities

Unsupervised Domain Adaptation with GAN | Course Project *Spring 2019*
Guide: Prof. Biplab Banerjee | Dept. of Resource Engineering | IIT Bombay

- Implemented the research paper **Unsupervised Pixel–Level Domain Adaptation with Generative Adversarial Networks** on PyTorch
- The proposed method adapts source-domain images to appear as if drawn from the target domain by learning a transformation in pixel space from one domain to other based on GANs
- Outpaced the proposed method's performance by replacing the proposed PixelDA GAN with LS-GAN

Accent recognition | Course Project *Autumn 2019*
Guide: Prof. Preeti Jyoti | Dept. of Computer Science | IIT Bombay
- Extracted and refined the Long and Short Term features from the audio data using PCA and HLDA
- Improved the Accent classification by combining phonetic vowels with acoustic features and trained the model using a combination of Deep Neural Networks and Recurrent Neural Networks

Neural Style Transfer | Course Project *Spring 2019*
Guide: Prof. Biplab Banerjee | Dept. of Resource Engineering | IIT Bombay
- Implemented the research paper **A Neural Algorithm of Artistic Style** using TensorFlow for **texture transfer** algorithm, that constrains a texture synthesis method by feature representations
- Utilized Deep convolutional generative adversarial networks with **Wasserstein loss** to generate images

International Aerial Robotics Competition | AUVSI foundation *Sept 2018 - Jan 2019*
Unmesh Mashruwala Innovation Cell | IIT Bombay
- Contributed to control and hardware design of autonomous quadcopters in a **GPS-denied** environment
- Implemented communication between on-board processor Intel i5 NUC, offboard computer and **Pixhawk** for transfer of localization and IMU data using MAVLink communication protocol on ROS
- Utilized **LIDAR** sensors and **Stereo Vision** camera to maintain the current position of the quadcopter
- Investigated optimum PID parameters which enhanced flight stability and performance

Autonomous Sign Following Bot *Summer 2018*
Institute Technical Summer Project | IIT Bombay
- Engineered an autonomous car using **Raspberry Pi** and ultrasonic sensors which can read sign boards using **Image Processing** techniques and navigate with the help of these signs
- Trained a model using TensorFlow to perform **multi-class** classification of sign board images

Academic Achievements
- Awarded **Undergraduate Research Award** (URA 01) for indigenous MRI contribution *(2019)*
- Awarded **Letter of Appreciation** for Excellent performance in MHRD - TEQIP III - KITE Activity Mathematics in Engineering, Initiative of the MHRD, Govt. of India *(2018)*
- Awarded **Kishore Vaigyanik Protsahan Yojana** (KVPY) fellowship by IISc Bangalore *(2016)*
- Completed A1 level **Spanish** & **German** courses organized by Cultural Council, IIT Bombay *(2017)*

Technical Skills

Programming	C++, C#, Javascript, Python, Robot Operating System
Web Development	HTML, CSS
Data Analysis	MATLAB, Gnuplot, Matplotlib, TensorFlow
Other Softwares	AutoCad, SolidWorks, Arduino, Unity 3D, Spice, LaTeX, Adobe Premiere Pro

Positions of Responsibility

Coordinator | Events | TechFest, IIT Bombay *May 2018 - December 2018*
Asia's Largest College Technical Festival | 1,75,000+ footfall
- Lead a team of **10+** to organise and monitor International exhibitions, showcasing **30+** world class innovations to more than **60,000** people from all over India
- Assisted in 'SPEAK: Stand to Express', an initiative to promote Mental Wellness in over 8 states through a network of **50+** colleges targeting **7000+** college students

Key Courses Undertaken

Electrical Engineering	Network Theory, Signals and Systems,Electrical machines, Power Electronics, Digital Systems, Electromagnetic Waves, Communication Systems, Microprocessors, Control Systems*, Digital Signal Processing*, Digital Communications*, Power Systems*
Mathematics	Data Analysis and Interpretation, Probability and Random Processes, Calculus, Linear Algebra, Differential Equations, Complex Analysis
Computer Science	Data Structures and Algorithm, Machine Learning, Automatic Speech Recognition, Medical Image Computing*, Cryptography*, Computer Vision*

$*$ *to be completed by April 2020*