Rishabh Ramteke
Electrical Engineering
Indian Institute of Technology Bombay

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UG Third Year (B.Tech.)
Male
DOB: 07/06/1999

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	7.85
Intermediate/+2	Andhra Pradesh Board of Secondary Education	Sri Chaitanya Jr. College	2017	98.20
Matriculation	CBSE	Dr. KKR's Gowtham Int School	2015	10.00

Research Experience

Discovering Latent Blockmodels with multiple information *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 **AAAI** conference, one of the top ranked AI conferences

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 *Sept. 2018 - June 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**

Technical Activities

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

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

Multi-Cycle Processor Design | Course Project *Spring 2019*
Guide: Prof. Virendra Singh | Dept. of Electrical Engineering | IIT Bombay

- Designed a multi-cycle processor using VHDL that could **successfully execute 14 different 16-bit instructions** which together can perform any general task regardless of complexity
- Implemented the instructions in the form of a finite state machine with several overlapping states between instructions, helping lower the complexity of the design and simulated it on Quartus

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

Arduino Gaming Console *Autumn 2018*

Electronics and Robotics Club | IIT Bombay

- Developed a motion detecting game controller with Arduino Uno employing MPU-6050 sensor and programmed a **Kalman filter** to achieve maximum accuracy from the raw sensor data

Digital Phase Meter | Course Project *Spring 2018*

Guide: Prof. M.B.Patil | Dept. of Electrical Engineering | IIT Bombay

- Displayed the phase difference between two sinusoidal waveforms on a **2-digit 7-segment display** by utilizing Comparators to convert sinusoidal waveform into square waveform, AND Gates, 555 timer to generate a square waveform of known frequency and Counters to count the number of clock pulses

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	Electrical Devices, Network Theory, Signals and Systems,Analog Circuits, Electrical machines and Power Electronics, Digital Systems, Electromagnetic Waves*, Communication Systems*, Microprocessors*
Mathematics	Data Analysis and Interpretation, Probability and Random Processes*, Calculus, Linear Algebra, Differential Equations, Complex Analysis
Computer Science	Computer Programming and Utilization, Data Structures and Algorithm, Machine Learning for Remote Sensing, Automatic Speech Recognition*

$*$ *to be completed by December 2019*

Extracurriculars

- Secured **Top 5** position in Segreta, a tech cryptic hunt conducted by Techfest, IIT Bombay
- Instructed two teams of four each to successfully complete a **Bluetooth Controlled Bot**
- Part of the **gold** winning hostel team in inter hostel sophomore cross country run GC
- Completed a year long rigorous training in **Lawn Tennis** under National Sports Organization
- Volunteered in the **World's largest** beach cleanup campaign at Versova by Afroz Shah
- Awarded certificate of achievement for Successfully **Skydiving** over Melbourne
- Mentored a group of students for **Machine Learning** as a part of summer of science program