Rupesh
Computer Science & Engineering
Indian Institute of Technology Bombay

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B.Tech.
Male
DOB: 29/06/1998

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	9.59
Intermediate/+2	CBSE	L. B. S. School, R. K. Puram, New Delhi	2016	96.60
Matriculation	CBSE	RK Mission Vidyapith, Deoghar	2014	10.00

Pursuing *Minor* in **Applied Statistics And Informatics** and *Honors* in **Computer Science and Engineering**

Academic Achievements

- Currently ranked 10 in the Department of Computer Science among 124 students
- Secured an **AP** grade (Advanced Performer) in *Computer Programming and Utilization* and *Data Analysis and Interpretation* courses for exceptional performance
- Secured All India Rank 31 in IIT JEE-Advanced 2016
- Secured All India Rank 82 in JEE-Main 2016
- Achieved International Rank 18 in the finals of National Science Olympiad, 2014 conducted by SOF

Internships

Alpha prediction for Aggressive Trading *May-July'19*
Strategy Intern *Tower Research Capital*
- Predicting the signals corresponding to the prices of a given product after various timesteps using multiple machine learning and data processing algorithms.
- Converting the predictions into buy-sell triggers for the market using simple taking strategies.
- Cross comparing various signals and learning algorithms to investigate the reasons for success and failures on various metrics like R2 Score, P&L value, Volume Traded, Overfitting.

Optimising Community Forum *December'18*
Winter Intern *Edfora*
- Added Radis Catching as middleware between query and response to improve the response time.
- Improved the feed ranking by modifying the post scoring algorithm similar to that of Reddit.
- Added an RNN based classifier to suggest a topic to each feed entry.

Big Data Applications and Systems *May-July'18*
Under Prof. Professor Geoffrey C. Fox, Indiana University, USA *Worked Remotely*
- Investigating current and future use cases of Big Data in various fields.
- Understanding MapReduce and resource management in Hadoop along with running test programs.
- Detailed study of specific use cases of Big Data analytics such as recommender systems and Large-scale neural networks distributed in a MapReduce framework.

Research Projects

3D Reconstruction in Cryogenic Electron Microscopy *Ongoing*
Research and Development Project under Prof. Ajit Rajwade
- Improving on the earlier work by adding an additional freedom of translation in the input data.
- Running the framework on real world data after proper denoising and contrast correction.

Auto Tuning Spark Applications on a Kubernetes cluster *Autumn 2018*
BTech Project under Prof. Umesh Bellur
- Developed a framework to output resource consumption for input set of configurational parameters.
- Generated more analytical data for further analysis in configurational parameters optimisation.

Neural Network for Image Processing *Spring 2018*
Research and Development Project under Prof. Suyash Awate
- Single image super-resolution using neural network following the ideas of **EnhanceNet**
- Experimented with conversion of images to sequence models for application of **LSTM** cells

Course Projects

- **Zero Shot Learning in Scene Graph Generation** *Advanced Machine Learning , Spring 2019*
  Extended the Scene Graph generation to infinite vocabulary predicate by predicting the target word-embeddings which can then be mapped to the closest word in the Embedding space.
- **VQA : A CS763 Odyssey** *Computer Vision , Spring 2019*
  Worked on the existing Visual Question Answering using Deep Learning approach, adding improved Word Embeddings and a side classifier to switch between modules for YES/NO answers and normal answers.
- **EDGE: Efficient Digital Grading Environment** *Database and Information Systems , Autumn 2018*
  End to End solution for Exam Conduction which given text by instructor, generates question paper in LateX , assign scanned papers to Teaching Assistant for evaluation and provides scores to students.
- **SPSIM: Superscalar Processor Simulator** *Computer Architecture , Autumn 2018*
  Built a MIPS Code Simulator from scratch in C++ following a real superscalar microprocessor architecture adding features such as Out-of-order Execution and multiple Processing units for faster execution.
- **Transfer Learning for Image Prior** *Medical Image Computing , Spring 2018*
  ○ Used ideas of Neural Style Transfer to generate image prior for denoising.
  ○ Implemented method of Dictionary transfer for image denoising using K-SVD and matching pursuit.
- **Railway Signalling Controller** *Digital Logic Design , Spring 2018*
  Programmed a Spartan FPGA Board in VHDL to work as a railway signalling controller along with encrypting the communication between the boards.
- **GetSchedGo** *Software Systems Laboratory, Autumn 2017*
  Developed a web time table scheduling application using Django with personalisations like events suggestion, smart scheduling, course based events and syncing the result with the Google Calendar.

Electives Undertaken

Medical Image Computing, Statistical Inference, Advanced Machine Learning, Computer Vision, Competitive Programming, Applied Stochastic Processes, Foundations of Intelligent and Learning Agents*, Speech Processing*, Introduction to Entrepreneurship*, Learning Analytics and Educational Data Mining*

**Ongoing*

Programming Skills

Language	C, C++, Java, Python, MATLAB, Racket, Prolog, VHDL, MIPS, Bash, JS, SQL
Tools	Git , Pytorch, TensorFlow, WireShark, Android, LaTeX, Pandas, Matplotlib

Positions of Responsibility

Teaching Assistant

- **Data Analysis and Interpretation** course under Prof. Ajit Rajwade and Prof. Suyash Awate *Ongoing*
- **Design and Analysis of Algorithms** course under Prof. Bharat Adsul *Spring'19*
- **Computer Programming and Utilization** course under Prof. Varsha Apte *Autumn'18*
- **Abstractions and Paradigms for Programming** course under Prof. Amitabha Sanyal *Spring'18*
- **Computer Programming and Utilization** course under Prof. Umesh Bellur *Autumn'17*

Department Academic Mentor *Ongoing*
○ Mentoring 6 sophomore students through their Academic transition from 1st year.

Department Placement Coordinator *Ongoing*
○ Representing Department in Placement Team and guiding the batch through placement procedure.

Extracurricular Activities

- Ranked 494 in Round 1C of Google Code Jam , 2019 *(2019)*
- Mentored in Season of Code, 2019, organised by WnCC, IIT Bombay *(2019)*
- Associated with National Service Scheme, IIT Bombay under Educational Outreach program *(2016-17)*
- Black belt in karate under Seigo-Kai Karate-do Association of India *(2014)*
- Awarded 2nd best project and best demonstrator in Chemistry Department in Biennial Science Exhibition conducted by *Ramakrishna Mission Vidyapith, Deoghar, Jharkhand* *(2013)*