Sravan Patchala | **14D070012**
Electrical Engineering | **Dual Degree (B.Tech+M.Tech.)**
IIT Bombay | **Male**
Specialization: Communication and Signal Processing | **DOB: 23/09/1996**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2019	8.08
Intermediate/+2	HSC	Pace Junior Science College	2014	91.69
Matriculation	ICSE	Pawar Public School	2012	95.71

Website: sravps7.github.io/ **LinkedIn:** www.linkedin.com/in/sravan-patchala

Summary

Passionate about math-intensive tasks involving signal processing, machine learning, game theory, optimisation and probability and also applications of these in finance and decision analysis. Successfully completed various courses and technical projects in these fields, both self-motivated and under guides. Possess ability to lead and motivate high performance teams. Possess good communication and management skills. Enthusiastic in taking up responsibilities and in confronting and solving challenging problems using analytical thinking.

Key Scholastic Achievements

- Pursuing a Minor in Industrial Engineering and Operations Research (IEOR)
- Secured an All India Rank of 433 in the Joint Entrance Exam (Advanced) - 2014 out of 150,000 students
- Secured an All India Rank of 639 in the Joint Entrance Exam (Mains) - 2014 out of 1,400,000 students
- Secured the INSPIRE Scholarship for being in the top 1%ile in Intermediate 2014

Relevant Coursework and Technical Skills

Data Science & Mathematics	Machine Learning, Online Machine Learning, Number Theory and Cryptography, Calculus, Advanced Concentration Inequalities, Markov Chains and Queuing Systems, Random Graphs, Matrix Computations, Differential Equations
IEOR	Optimization Models, Financial Engineering, Industrial Scheduling, Economics, Game Theory, Markov Decision Processes, Internet Economics
Signal Processing & Communication	Signals and Systems, Digital Signal Processing, Digital Image Processing, Speech Processing, Advanced Topics in Signal Processing, Communication Systems, Digital Communications, Error Correcting Codes
Programming	C/C++, Java, MATLAB, Python, VHDL, LATEX, HTML, CSS, JavaScript

Key Projects and Internships

Qualcomm India Private Limited [Summer '17]
Software Centre, Hyderabad
Part of 2 live projects as an Interim Software Engineering Intern in the Product Commercialisation Team
- Among 3 out of 80+ interns to be rewarded with a QualStar as appreciation for outstanding contributions
- Designed and developed user-customisable web-based solutions to monitor and manage chipsets' lifecycles
- Optimised the results making efficient use of the past data of the user stored in the database

Machine Learning in Wireless Sensor Networks [Summer '16]
Guide: Prof. S. Merchant, EE Dept, IIT-B
Minimising energy consumption in Wireless Sensor Networks using Machine Learning algorithms
- Implemented an algorithm in Python to minimise the number of sensors needed to cover targets for random arrangements of nodes and targets by evaluating a waiting-time parameter for each node
- Devised and implemented an improved K-Means clustering algorithm for positioning relays, while minimising energy utilisation by the sensors and maintaining base-station connectivity

Visible Light Communication with Smart-phones [Winter '15]
Guide: Prof. K. Appaiah, EE Dept, IIT-B
Communication between an Arduino and a smart-phone using the flashlight of the phone
- Inspired by the Light Fidelity technology, developed an Android app to use the smart-phone's flashlight to encode and send messages to the receiver made with an arduino and infrared LEDs
- Assembled and tested the whole setup to achieve a transmission rate of 40 bits per second

Key Course Projects

Sparse Markowitz Portfolios [Autumn '17]

Guide: Prof. V. Rajbabu (EE779 Course Project)

Constructing a stable and minimum-variance portfolio with reduced number of active securities

- Implemented an algorithm to introduce sparsity in Markowitz portfolios by augmenting an additional L1-norm regularisation term in the objective function
- Tested the same on the database compiled by Fama & French and achieved results comparable to the all-even-weights portfolio, which has been shown to be a tough benchmark to match

Spoken Digit Recognition [Autumn '17]

Guide: Prof. P. Rao (EE679 Course Project)

Recognition of speaker from spoken utterances of digits

- Developed an end-pointer for automatic segmentation of the individual digit utterances from a continuous audio record and a feature extractor to compute the Mel Frequency Cepstral Coefficients
- Developed digit recogniser using Dynamic Time Warping and a Vector Codebook to achieve an accuracy of 97.5%

Multichannel Wireless Dimmer [Spring '17]

Guide: Prof. P.C. Pandey (Electronic Design Lab Project)

Control the intensity of dimmable-light appliances and can be accessed remotely over the internet

- Designed and manufactured a device to modulate the duty-cycle across an appliance using trailing-edge dimming
- Developed a web-interface, with which the user controls the intensity of the appliance over WiFi

Document Scanner [Autumn '16]

Guide: Prof. A. Rajwade (CS663 Course Project)

An image processing technique to reconstruct a large document using several smaller overlapping images

- Implemented a stitching pipeline that extracts the feature points using the ORB function of OpenCV and calculates the homography matrix for a pair of images using RANSAC algorithm
- Processed the aggregate image using gain compensation and multi-band blending techniques to remove prominent edges in the reconstructed image

Microprocessor design [Autumn '16]

Guide: Prof Virendra Singh (EE309 Course Project)

A 16 bit microprocessor that implements 15 instructions

- Designed Multicycle and Pipelined Processors using VHDL from scratch and synthesized the same on Altera DE0 Nano FPGA.
- Implemented Branch Predictors, Priority Encoders and Hazard Detection Units to reduce latencies and significantly reduce the branch hazards

Major Positions of Responsibility

Institute General Secretary [Apr'17 - Present]

Student Technical Affairs, Gymkhana IIT Bombay

- Elected representative of 8000+ students and in-charge of managing a budget of INR 2 million
- Spearheading a team of 100+ students catering to a strength of 10000+ students and responsible for organising technical activities in the institute as well as participation in international competitions
- Revamped previous council set-up; Promoted collaboration by guiding in setting up similar bodies in other IITs

Institute Robotics Secretary [Apr '16 - Mar '17]

Students' Technical Activities Body

- Led a team of 6 members to organise technical events and discussions for the robotics-enthusiast community, which had a strength of over 500 students from all years
- Addressed a crowd of over 200 people on introductory and advanced talks on mechanical grippers, image processing and electrical motors and also mentored students on these topics
- Coordinated the Institute Technical Summer Projects, a platform to develop self-ideated projects; Saw huge participation from about 350 sophomore students and 90 projects

Department Student Mentor **[Apr '16 - Present]**

Department Academic Mentorship Program

- Among the 6 selected out of 141 batchmates to help academically weak students improve their academic standing
- Responsible for guiding 12 sophomore students to increase their overall performance and to help them cope up with the academics, hostel life and social culture in the institute
- Facilitated and improved faculty-student interaction within the department

Extra-Curricular Activities

Technical

- Developed CoinRaider, an open-world game, on Unity3D for the Lenovo Game Jam [2015]
- Stood first in the annual physics quiz competition involving all year students of IITB [2015]
- Stood third representing Hostel-3 in the campus wide Logic General Championship [2015]

Miscellaneous

- Member of National Sports Organisation (NSO) Football [2015]
- Proficient in playing Violin and Flute
- Can solve a 3x3x3 Rubik's Cube within 100 seconds