



**Pranav Vasudeva Rao**  
**Computer Science & Engineering**  
**Indian Institute of Technology Bombay**

**160100021**  
**UG Second Year**  
**Male**  
**DOB: 05-10-1998**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2018	9.62
Intermediate/+2	HSC	VG Vaze College	2016	93.54
Matriculation	CBSE	VPM's BR TOL High School	2014	10.00

Pursuing **Minors** in Mathematics

## SCHOLASTIC ACHIEVEMENTS

- Secured an **All India Rank of 26** in **JEE Advanced 2016** among 150 thousand candidates
- Bagged **All India Rank 35** in **JEE Main 2016** among 1.5 million candidates
- Currently 9th in the department of Computer Science department among 120 students
- Among the top 300 students in India to qualify for **INChO** in 2015-16 and in **INMO** in 2014-2015
- Received merit certificates for being amongst the top **one percent** students in each of the Indian National Olympiads of Physics and Chemistry in the year 2015-16
- Awarded the prestigious **KVPY Fellowship** by Government of India with All India Rank 118
- Recipient of the **National Talent Search Examination (NTSE)** Scholarship awarded by Government of India

## KEY PROJECTS

### MATSYA

*Autonomous Underwater Vehicle (AUV) project*

*Oct '16 - Present*

*IIT Bombay*

- Chief engineer in software sub-division of the AUV-IITB team
- Worked on **signal processing algorithms** in **C++** for collecting acoustic data from hydrophones and processing the data to localize on the pinger emitting the sound pulse
- Contributed to PID controller, written in **C++** and Navigator and State packages, written in **Python**
- Currently working on an algorithm to localize AUV with inputs from multiple sensors using **Kalman filter**

### Interactive Academics

*Course project under prof. Kavi Arya, CSE Dept*

*Sept '17 - Present*

*IIT Bombay*

- Designed a Question/Answer forum, particularly for the courses at universities
- Implementing **PHP framework** to facilitate students in asking their queries to faculties and other peers
- Working on Relational Database Management System to store data of question threads using MySQL
- Building a chatbox for direct communication and calendar for event scheduling
- Working on **NLP algorithms** for grouping similar questions using tags and searching questions asked by peers

### Ballerina

*Institute Technical Summer Project, STAB*

*June '17 - July '17*

*IIT Bombay*

- Designed a self-balancing 2-D plate using **inverted pendulum mechanism**, inspired from Cubli
- Integrated an **IMU** for measuring deviation angle and implemented PID controller for the movement of inertia wheel
- Implemented **I2C communication protocol** for the communication of MPU with Arduino
- Tuned the controller parameters so that the recovery angle of the square was about 6 degrees

### Remote controlled and autonomous bots

*Technical competitions held by STAB, IITB*

*July '16 - Mar '17*

*IIT Bombay*

- Designed and constructed robotic car for XLR8 (racing competition) using **ATTINY2313A** for functioning of bot and **L293D motor driver** for control
- Developed and piloted **RF controlled plane** propelled by brush-less DC motor
- Designed an autonomous line and wall follower car using Arduino and infrared LED sensors

## TECHNICAL SKILLS

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<b>Programming</b>	C++, Java, Bash, Python, Android Studio
<b>Web Development</b>	HTML, CSS, Bootstrap, Javascript, PHP, SQL
<b>Software</b>	GNU Octave, MATLAB, Gnuplot, Git, L <sup>A</sup> T <sub>E</sub> X, AutoCAD, Arduino

## POSITIONS OF RESPONSIBILITY

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**Teaching Assistant** July '17 - Present  
*MA 105 - First year UG calculus course*

- Mentoring 49 first year students under Prof. Ravi Raghunathan (Maths Department IIT Bombay)
- Responsible for **teaching** and **evaluating** them, providing feedback to the Instructor-in-charge

**Volunteer at NGO** July '16 - Mar '17  
*NSS IIT Bombay activity during the first year*

- Taught students from 3rd to 10th grade at **two NGOs** Asha and LCCWA, as a part of National Service Scheme
- Awarded with a certificate for completing **80 hrs of social work** from IIT Bombay

**Organizer** Dec '16 - Jan '17  
*Techfest and Tech R & D expo at IIT Bombay*

- Coordinated and helped in arranging technical exhibitions during Techfest
- Responsible for organizing Tech exposition and explaining the audience about the technical displays

## COURSES UNDERTAKEN

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<b>Computer Science</b>	Data Structures and Algorithms*, Abstractions and Paradigms**, Software Systems Lab*, Digital Logic Design**, Discrete Structures*, Design and Analysis of Algorithm**, Logic for Computer Science**, Computer Networks**, Machine Learning(Stanford, Coursera, Circuits*, Introduction to programming through C++
<b>Maths</b>	Basic Algebra(Groups, rings and fields)*, Calculus, Data Analysis and Interpretation, Linear Algebra, Differential Equations
<b>Others</b>	Quantum Physics and application, Introduction to Electrical and Electronics,Basics of Electricity and Magnetism, Economics**

\* to be completed by November 2017

\*\* to be completed by April 2018

## EXTRACURRICULAR

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- Completed a reading project on the topic **Introduction to Topology** as an activity of Summer of Science, event of Maths and Physics Club, IIT Bombay (May '17 - July '17)
- Successfully attended the **Vijyoshi Camp-2015** held for the KVPY fellow students at IISc Bangalore, aimed at providing exposure to students in the field of Research and Science (Dec '15)
- Attended a four day camp at Homi Bhabha Centre for Science Education (HBCSE), held for training the students selected for Indian Maths Olympiad(INMO) (Dec '14)
- Bagged **11th Olympiad rank** in advanced level French Language Olympiad and **9th Olympiad rank** in intermediate level French Olympiad (2012-'14)
- Awarded with MTSE(Maharashtra talent search examination) scholarship consecutively for 2012, 2013 and 2014