

## SCHOLASTIC ACHIEVEMENTS

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- Pursuing a **Minor** in **Computer Science** from with a minor CPI of 10.00 (2017)
- Awarded **AP** grade for excellent performance in **Electronic Devices Lab** (rank 1 out of 139 students) (2017)
- Secured **All India Rank 474** in **IIT JEE-Advanced Examination** among 150,000 candidates (2016)
- Bagged **All India Rank 458** in **JEE Mains** among 1.3 million candidates (2016)
- Bestowed with the prestigious **KVPY Fellowship** by DST, Govt. of India with **All India Rank 106** (2016)
- Awarded **Certificate of Merit** for being placed in the **Top 1 percent** students amongst 44,032 candidates at national level in NSEP conducted by IAPT (2016)
- Recipient of **National Talent Search Examination(NTSE)** Fellowship by NCERT, Govt of India (2014)
- Awarded **Silver Medal** in **Dr. Homi Bhabha Bal Vaidnyanik** Science Talent Search Competition and **MOM Junior Science Olympiad** organized by Maharashtra Olympiad Movement (2014)
- Bagged 11th rank in Mathematics Olympiad conducted by IIT Bombay (2013)
- Secured **National Rank 4** in National Science Olympiad and **International Rank 16** in International Maths Olympiad conducted by Science Olympiad Foundation (2010)

## INTERNSHIPS

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### Parametric Time Dependent Entropy of EEG

(Summer 2018)

Prof. Anastasios Bezerianos | Cognitive Engineering, SINAPSE

National University of Singapore

- Developed and implemented algorithms in Python to calculate and analyze four distinct **Parametric Time-Dependent Entropies (TDE)** of an EEG (Electroencephalogram) signal
- Designed an algorithm using Time-Dependent Entropy to perform **real-time mental fatigue monitoring**
- Applied Support Vector Machine(SVM) to classify **Cognitive Fatigue** and **Mental Workload** achieving **75%** and **82%** classification accuracy respectively
- Developed a **Graphical User Interface** in Qt framework for projection of the aforementioned results

## PROJECTS

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### Mars Rover Project

(October 2017 - Present)

(The team represented India at the international finals of URC-2018 and bagged 31st position out of 95 participating teams worldwide)

- Responsible for integration of an Battery Management System with **Active Cell Balancing**
- Conceptualised onboard sensor fusing of GPS and IMU via **Kalman Filter** for robust localisation of the rover
- Obtained hands-on experience on implementation of **IK code for robotic arm control**, a **BMS enabled battery** and codes to operate DC motors via **H-bridge motor driver**

### Semiconductor Device Parameter Extraction

(November 2017- Present)

Prof. M. B. Patil | Electrical Engineering Department

IIT Bombay

- Conducted a literary survey of variation in values of parameters of the **SPICE model of a bipolar junction transistor BC547** affect its device characteristics and how they can be tweaked to obtain desirable features
- Developed an iterative method based on **Particle Swarm Optimization** to **determine parameters of the transistor** from device characteristics accurately and in a **short convergence time**

### Touchless Gesture Recognition

(March 2018 - May 2018)

Prof. Siddharth Tallur | Course Project

IIT Bombay

- Bestowed with **Best Project Award** among 70+ projects
- Designed and implemented a Touch-less gesture Audio **volume controller**, **Motion tracker** (using an LED matrix) and a Gesture **pattern lock** using **Infrared Emitters and Sensors**
- Used **Altera Quartus** to code in **VHDL** and **Krypton CPLD** board to implement digital logic.

## Autonomous Bipedal Robot with Object Tracking

(Summer 2017)

*Institute Technical Summer Project*

*Students Technical Activities Body, IIT Bombay*

- Designed a **Bipedal robot** to mimic the **human walk** and capable of recognizing & following objects
- Implemented Control Protocol using **RaspberryPi 3** and designed an algorithm to recognise spherical objects
- Incorporated servo motors to provide the bot with **two degrees of freedom** to mimic the human walk
- Used RaspberryPi camera along with **OpenCV 3.2** library to process video input and track the object

## Fastest Finger First Indicator (FFFI)

(Spring 2017)

*Prof. M.B.Patil | Course Project*

*IIT Bombay*

- Designed a **Quiz Buzzer** through an electronic circuit that determines as to which of the four contestants pressed the button first, locking the entries of the other three members
- Framed the logic to use the input from IC 7475 to produce **latch-disabling signal** using circuitry comprising of dual 4-input NAND gates of IC 7420
- Used **coupling logic** to display corresponding number on the 7-segment display (using IC 7447 )

## Reaction Game

(Spring 2018)

*Prof Madhav P Desai | Course Project*

*IIT Bombay*

- Developed a game which counts the total reaction time in response to a randomly blinking LED
- Generated RTL and Gate Level simulations using Altera Quartus software and implemented the design in the Krypton CLPD card programmed using JTAG to perform the digital logic
- Used various concepts of registers, flip-flops, finite-state machines, etc in structural VHDL coding and also generated a pseudo-random number for the LED to blink after a random time
- Interfaced the design with the LCD controller to display the final time on the LCD pane

## TECHNICAL SKILLS

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<b>Programming</b>	C++, C, Python, Java, Arduino
<b>Web Development</b>	HTML, CSS, JavaScript, PHP
<b>Software packages</b>	MATLAB, Gnuplot, Git, AutoCAD, SolidWorks, Ngspice, L <sup>A</sup> T <sub>E</sub> X

## POSITIONS OF RESPONSIBILITY

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### Hostel Web and Computer Secretary

(August 2017 - May 2018)

*Hostel 5*

*IIT Bombay*

- Administered and updated the Hostel Website with respect to hostel events, activities, festivals and mess
- Responsible for maintaining and updating hostel computer systems and networks
- Administered the hostel LAN and address network related issues faced by hostel inmates

### Coordinator, Web and Creatives

(August 2017 - December 2017)

*Mood Indigo - Asia's largest cultural College Fest*

*IIT Bombay*

- Developed website, apps and portals for Mood Indigo 2017 expected to receive over 6.5 million hits
- Managed a team of over 50 organizers to conduct and execute events in Mood Indigo 2017
- Designed the Website for Mood Indigos Social Cause Swab to Save using html5, css3, jquery and bootstrap

## COURSES UNDERTAKEN

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<b>Core Courses</b>	Microprocessors*, EM waves*, Communication Systems*, Control Systems**, Digital Signal Processing **, Microelectronics, Electronic Devices and Circuits, Signals and Systems, Analog Circuits, Digital Systems, Electrical Machines and Power Electronics
<b>CS and Maths</b>	Introduction to Machine Learning *, Data Structures and Algorithms, Computer Networks, Calculus, Complex Analysis, Probability and Random Processes *
<b>Others</b>	Quantum Physics and Application, Moral and Political Philosophy , Psychology

*\*to be completed by November 2018*

*\*\*to be completed by April 2019*

## EXTRACURRICULARS

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- Volunteered for the Green Campus initiative of National Service Scheme(NSS), IIT Bombay (2016)
- Quarterfinalist at the Freshman Squash Open organised by IIT Bombay (2016)
- Bagged 2nd place at Vigyasa, an Inter-College general knowledge quiz (2015)
- Elected School Captain to lead a 15 member school council (2013)
- Cleared Elementary Drawing Examination organised by the Government of Maharashtra (2010)
- Awarded Silver Medal in IKEN Scientifica Robotics Olympiad (2010)
- Maharashtra State Champion in Abacus Mental Arithmetic Exam organised by UCMAS (2008)