Harsh Saiprasad Deshpande | **16D070011**
Electrical Engineering | **UG Third Year (Dual Degree)**
Indian Institute of Technology Bombay | **Male**
Specialization: Microelectronics | **DOB: 05/09/1998**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2019	0.00

Scholastic Achievements

- 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)*
- Recepient of **National Talent Search Examination(NTSE)** Fellowship by NCERT, Govt of India *(2014)*

Internships and Key Projects

Parametric Time Dependent Entropy of EEG | Summer Internship *(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

IITB Mars Rover Project *(October 2017 - Present)*
(The team represented India at the international finals of URC-2018 and bagged 31st position out of 95 teams)

- Implemented **Inverse Kinematics algorithm** for closed-loop control of the 6 DoF robotic arm, with **visual pose estimation** on RViz via URDF model using encoder feedbacks to aid remote operation
- Conceptualised onboard sensor fusing of GPS and IMU via **Kalman Filter** for robust localisation of the rover
- Responsible for integration of a Battery Management System with **Active Cell Balancing**

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 charecteristics 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 charecteristics accurately and in a **short convergence time**

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

Positions of Responsibility

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

Extracurriculars

- Volunteered for the **Green Campus initiative** of National Service Scheme(NSS),IIT Bombay *(2016)*
- Bagged **2nd place** at Vigyasa, an Inter-College general knowledge quiz *(2015)*
- Cleared Elementary Drawing Examination organised by the Government of Maharashtra *(2010)*
- Maharashtra **State Champion** in Abacus Mental Arithmetic Exam oraganised by UCMAS *(2008)*