Durgaprasad Prakash Bhat | **200070017**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 18/9/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	

Pursuing a minor in **Artificial Intelligence and Data Science** at IIT Bombay

Scholastic Achievements

- Awarded **AP** grades in the courses on **Complex Analysis** (MA205) and **Basic Biology** BB(101) *(2021)*
- Secured **AIR 774** in **JEE Advanced** exam amongst **0.15 million** candidates *(2020)*
- Earned the prestigious **Kishore Vaigyanik Protsahan Yojana (KVPY)** fellowship *(2019)*

Technical Projects

Approaches to waveform synthesis | Project *(May' 2022-present)*

Guide: Prof. Maryam Shojaei Baghini, Department of Electrical Engineering IIT Bombay

- Studied different approaches used for waveform synthesis such as **DDS, LUT, DSP libraries** etc.
- Developed firmware for **C5515 eZDSP** development kit to generate sine, square, triangular and sawtooth waves with **resolution of 16Hz**
- Analysed various functional blocks in a **Digital Direct Synthesis** based waveform generator system
- Currently upgrading the firmware for a **custom-designed** development board for generating square, triangular and sawtooth waveforms with the **precise tuning of amplitude and frequency**.

IIT Bombay Student Satellite Program *(June 2021 - present)*

A 70+ member student team dedicated to the vision of making IIT-B a centre of excellence in space technology

Star Tracker Based Attitude Determination System (STADS) | Electrical Subsystem

A CubeSat compatible Star Tracker Based Attitude Determination System to be tested on-board the PS4-OP

- Researched on schematics and PCB designing for **high-speed circuits** and **multi-layer PCBs**
- Worked on designing various **development board** for breakout and interfacing ZYNQ 7000 **FPGA**, **Python 480** and **OV 7670** optical sensors and other ICs for component evlauation and integrated testing
- Analysed the feasibility of incorporating **Rigid-flex PCBs** in the system architecture to solve space constraints
- Implemented and tested the C code of the **attitude estimation** block of a 3-stage image processing pipeline on **AJIT** one of India's **first indigenously developed microprocessor** onboard the Star Tracker
- Working on interfacing the Python480 Image sensor with AJIT for **Hardware-In-Loop Simulation**

IITB-RISC-22, 16 Bit Microprocessor | Course Project *(Mar'-Apr' 2022)*

Guide: Prof. Virendra Singh, Department of Electrical Engineering, IIT Bombay

- Devised the design for the 16-bit **6-stage, pipelined RISC** processor with branch prediction, **control and data hazard mitigation unit**, implementing 15 instructions and described it in VHDL in a team of 4

Analog Circuit Design and simulation using Cadence *(May'-Jun' 2022)*

Guide: Prof.Rajesh Zele, Dept. of Electrical Engineering IIT-B | Curriculum Oriented Research Experience 2022

- Worked on different aspects of Analog VLSI design process such as **schematic design**, DC, AC, transient, noise, PVT variation analysis, **layout**, parasitic extraction and post-extraction simulations in Cadence
- Designed the schematics of common source, common gate, common drain amplifier and **differential amplifier**
- Designed the schematics and layout of **ring oscillator** and compared its performance before and after layout

Microprocessors Lab | Course Project *(Aug'-Nov' 2021)*

Guide: Prof. Saravanan Vijayakumaran | Microprocessors Lab

- Interfaced a speaker with the **AT89C5131** development board in **assembly** using Keil uVision to generate music by exploiting its **timers and interrupts**
- Programmed the development board in embedded C to make a **interactive ATM emulator** taking inputs from a computer terminal using **UART** and displaying outputs and instructions using an **onboard LCD**

Technical Skills

Programming Languages	C++, Python, VHDL, embedded C, Assembly, LaTeX
Software	Quartus, EAGLE, Code Composer Studio, Cadence Virtuoso, Keil uVision, LTspice, NGspice, Git, ROS, Gazebo, Android Studio

Extra-Curricular Activities

- Finished **first in Nashik city** and competed **national semifinals** in **National Stock Exchange FUNancial Quest season 6** representing New Era English School among **14 teams** selected nationwide *(2017)*
- Secured **Olympiad Rank 8** in **General Knowledge Maestro Olympiad** and **Olympiad rank 18** in **Science Supremo Olympiad** by **Competition Promotion Society** *(2016)*
- Completed year long course on **general fitness** under **National Sports Organization** *(2020-21)*