Sanket J Hanamashetti | **190070057**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 15-10-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	CBSE	DAV International School, Kharghar	2019	97.00%
Matriculation	CBSE	DAV International School, Kharghar	2017	98.80%

Pursuing Honors in **Electrical Engineering**
Pursuing Minor in **Systems and Control Engineering**

Scholastic Achievements

- Received **Institute Academic Prize** based on an exemplary **CPI** in the first year *[2019-20]*
- Accomplished a perfect **SPI** of **10** in the first and fourth semesters *[Autumn '19 & Spring '21]*
- Secured an **All India Rank** of **198** amongst **0.2 million** aspirants in **JEE Advanced** *[2019]*
- Achieved an **All India Rank** of **346** out of **1 million** candidates in **JEE Main** *[2019]*
- Recipient of the esteemed **Kishore Vaigyanik Protsahan Yojana** (KVPY) fellowship *[2018]*

Technical Projects

■ Digital Correlator For NavIC *[June '21 - Present]*

NavIC is a Navigation Receiver Front-end for GPS and IRNSS ***Guide: Prof. Rajesh Zele***

- Studied the **GPS Signal Transmission System** and how it's used to **triangulate** a user's position
- Executed **GPS signal acquisition** and **tracking** using **MATLAB** codes and **Simulink** models
- Implemented digital **Delay Locked Loop** and **Costas Loop** for tracking an acquired GPS satellite
- Generated **VHDL** codes from the Simulink model and verified their functionality

■ Rohde & Schwarz Engineering Competition 2021 *[May '21]*

A month-long online competition organised by Rohde & Schwarz in the domain of signal analysis

- Developed **Python** codes to automate **signal parameter estimation** from noisy IQ signal data
- Studied concepts such as **modulation types, symbol rate and constellation diagrams**
- Estimated **symbol rate** with a **precision** of **10kHz** using Power Spectral Density
- First Indian team to reach the finals in the history of the competition

■ Digital Neural Circuits *[April '21 - June '21]*

MeLoDe Lab, EE IITB

- Studied the functionality of artificial **neurons and synapses** in a neural network
- Developed **VHDL** codes to mimic the functionality of neurons and synapses
- **Simulated** a **two-layered neural circuit** made of neurons and inhibitory & excitatory synapses

■ Question Paper Generator *[December '20 - January '21]*

A GUI to handle Question Paper Generation ***Guide: Prof. Kumar Appaiah***

- Developed a **GUI** using **python** for generating question papers & solutions from an **SQLite** database
- Implemented functionalities such as **randomizing the order** of questions, randomizing question parameters, **editing** the table of questions & solutions and **previewing** the generated question paper & solutions
- Used **pypandoc** to generate question paper & solutions in Markdown, HTML, TEX and PDF **formats**

■ 16 Bit Arithmetic And Logical Unit *[Autumn '20]*

Course Project in EE224 (Digital Systems) ***Prof. Virendra Singh***

- Designed an ALU capable of **signed** addition, subtraction, NAND, XOR operations using **structural VHDL**
- Constructed a **Brent-Kung adder** with an input carry for use in addition and subtraction operations
- Simulated and verified the design using **ModelSim Altera** in **Intel Quartus Prime**

■ Hangman Game On A Microprocessor *[April '21]*

Course Project in EE337 (Microprocessors Lab)

- Wrote codes in **assembly language** and **Embedded C** to implement Hangman on Pt-51 board
- Interfaced **LCD** with the microprocessor to display letters and scores

■ **DC Power Supply** *[Autumn '19]*

Course project in EE113 (Introduction to Electrical Engineering Practice) ***Prof. Joseph John***

- Constructed a DC Power Supply by taking input from the AC Mains and converting it into DC outputs of ±12V and 5V using **Zener diodes** (12V) and **7805 IC** based +5V voltage regulator
- Implemented a **full bridge rectifier** in succession with a 15-0-15 centre tapped **transformer** and **soldered** all components onto a general purpose **PCB** for future use as a power supply

■ **Admittance Matrix Calculator** *[Spring '20]*

Course Project in EE114 (Power Engineering - I) ***Prof. Himanshu Bahirat***

- Developed a general **C++ code** which took a circuit consisting of independent AC sources and impedances as input in a **netlist**-like format and applied **node voltage analysis** to it
- Constructed a **complex admittance matrix** for the input circuit as the output

■ **Special Theory Of Relativity** *[April '20 - June '20]*

Summer of Science ***Maths & Physics Club IITB***

- Investigated basic principles of the **Special Theory of Relativity** such as constancy of speed of light, Lorentz transformations, length contraction, time dilation and spacetime diagrams
- Followed the development of the theory beginning from the **failures of Newtonian Mechanics**
- Discussed solutions to interesting **paradoxes** and briefly examined basics of General Relativity

Technical Proficiency

Programming	Python | C++ | Julia | Embedded C | VHDL
Softwares	MATLAB | Simulink | AutoCAD | Quartus | Vivado | Keil | SQLite
Frameworks/Libraries	Matplotlib | NumPy | Bootstrap

Key Courses Undertaken

Electrical Engineering

CMOS Analog VLSI Design* | Sensors in Instrumentation* | Communication Systems -I* | EM Waves* | Analog Circuits | Digital Systems | Signal Processing | Microprocessors | Electronic Devices | Control Systems | Power Engineering

Systems and Control Engineering

Linear and Non-linear Systems* |Mathematical Structures for Controls | Signals and Feedback Systems

Mathematics

Calculus | Linear Algebra | Probability and Random Processes | Complex Analysis

Labs

Analog Lab* | Control Systems Lab* | Communications Lab* | Digital Circuits Lab

Miscellaneous

Introduction to Philosophy* | Economics | Quantum Physics | Basics of Electromagnetism | Biology

**to be completed in Autumn 2021*

Position of Responsibility

■ **Teaching Assistant (PH107 - Quantum Physics & Applications)** *[Dec '20 - Jan '21]*

- Conducted **weekly tutorial sessions** and solved doubts of around **40 students** in an online mode
- Assisted the faculty in smooth conduction of **examinations** and **correction** of answer sheets

Extracurriculars

DST INPSIRE Camp *[2017]*

- Attended DST INSPIRE Camp organised at **IISER Pune** by Department of Science and Technology
- Took part in thought-provoking **lectures** and **demonstrations** conducted by distinguished **scientists**

Miscellaneous

- Stood **third** in an Institute wide **essay** writing competition on the topic '**Integrity: A Way Of Life**' organised by the Chief Vigilance Officer during **Vigilance Awareness Week** *[2019]*
- Emerged **second** in a **powerpoint presentation competition** on the topic **'South Pole'** held at Indian Institute Of Geomagnetism, Navi Mumbai *[2014]*
- Completed the National Sports Organisation (Cultural) Programme in **Keyboard** *[2019-20]*