Pravin Raut | **160110024**
Metallurgical Engineering and Materials Science | **Bachelor of Technology**
Electrical Engineering | **Master of Technology**
Indian Institute of Technology, Bombay | **Gender: Male**
Specialization: Microelectronics and VLSI | **DOB: 06-01-1998**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	[redacted]

Academic Achievements & Scholarships

- **Represented India** in **SDC-World Final 2017** held at Tampa, Florida (USA) organized by ASME [2017]
- **Department Rank 4** in Metallurgical Engineering and Materials Science 2020 batch of **78** students [2020]
- Secured **5th rank** nationally in National Level Mathematics Talent Search Examination [2013]
- Recipient of Panasonic Scholarship worth **2445 USD** awarded to **30** IIT students across India [2016]

International Exposure

Student Design Competition (SDC) | World Final 2017 — Tampa, Florida, USA
Invited by American Society of Mechanical Engineers (ASME) [Mar 2017–Nov 2017]
- Secured **1st position** beating the world's best **8 teams** from **4 countries**; winning prize money of **4,000 USD**
- Coordinated a **team of 10** members to build a robot with expertise in **5 distinct tasks** of the competition
- **Chief designer** of climbing subsystem to ascend 3 stairs in **10 seconds** by adopting rocker-bogie mechanism

SPIE Optics and Photonics Conference 2019 — San Diego, California, USA
- Awarded a **grant worth 2,115 USD** by IIT Bombay to present my research work in Low Dimensional Materials Conference, a part of SPIE Optics and Photonics 2019 | **4,000+ attendees**, 3,300 technical presentations
- **Presented the research work** on 'Improvement in carrier confinement of Quantum Dot-based photodetectors'

Artificial Neural Network for Atomic Calculations — IAMS, Academia Sinica, Taiwan
Dr. Ching-Ming Wei | Research Assistant [Nov 2019–Dec 2019]
- Implemented **ANN** using **ænet package** to replicate TiO_2 calculations and determine stability of Au clusters
- Trained model in **python** using **BFGS** method with **3000** initial structures to achieve RMSE below 5meV threshold

Density Functional Theory (DFT) for Electronic Properties — IAMS, Academia Sinica, Taiwan
Dr. Ching-Ming Wei | Summer Internship [May 2019–Jul 2019]
- Performed **Quantum Mechanical** Calculations using **VASP** Program to study electronic structures of Si & ZnO
- Excelled in performing **DFT calculations** on structures using **Fortran Language** to analyze electronic properties

Positions Of Responsibility

Mentor | Department Academic Mentorship Program [Apr 2019–Apr 2020]
- Selected from **60+ applicants** | Mentored underperforming sophomores to balance academics & other activities

Teaching Assistant | Introduction to Electrical & Electronic Circuits [Aug 2020–Present]
- Assisted to curate & deliver course content for **virtual teaching** | Responsible for solving doubts of **250+ students**

Projects & Competitions

Asia-Pacific Student Design Competition — LNMIIT Jaipur, India
Innovation Cell | IIT Bombay | Robot-Pentathlon [Dec 2016–Mar 2017]
- Overall **ranked 1**, beating all **11 teams** in the competition along with winners of the **Predictive Design & Simulation Challenge** and **Advance Manufacturing Challenge**; Received **500 USD** as prize money
- Ideated, designed and **built a bot** that can sprint, lift a weight, throw tennis ball, climb stairs and hit a golf ball

COVID-19 Spread - The SIR Model | Self Project [Apr 2020–May 2020]
- Implemented **Susceptible-Infected-Recovered (SIR)** epidemiological model using **MATLAB** for COVID-19 spread
- **Delivered** findings of study via **YouTube** video to spread awareness about the virus transmission among people

Publication

- **Pravin Raut**, R. Ramavath, J. Saha, D. Das, D. Panda, Subhananda Chakrabarti "Investigation of various capping layer configurations on heterogeneously coupled SML on SK **quantum dots** heterostructure", Low-Dimensional Materials and Devices, SPIE Optics and Photonics 2019

Extracurricular Activities

- Co-developed an **Android App** for WhatsApp stickers with **20k+** downloads and **4.5+** ratings [Jun 2020]
- **YouTube content creator**: Zero Gravity | Intent to educate people by explaining scientific topics [Apr 2020]
- Completed a workshop on Investing in **Financial Market**: Fundamental Analysis & Valuation [Apr 2020]

Technical Skills

Programming: Python | MATLAB | C++ | GNU Octave
ML Frameworks: Pytorch | TensorFlow | Keras

Scholastic achievements and extracurricular activities are not verified by the Placement Cell