Anubhav Agarwal | **17D070026**
Electrical Engineering | **UG Third Year (Dual Degree)**
Indian Institute of Technology Bombay | **Male**
Specialization: Microelectronics | **DOB: 24/02/1999**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	8.78
Intermediate/+2	CBSE	Jayshree Periwal High School, Jaipur	2017	93.00
Matriculation	CBSE	Maheshwari Public School, Jaipur	2015	10.00

Research Experience

- **Fraunhofer ITWM** — Kaiserslautern, Germany
  Internship — *May 2019- July 2019*
  - Awarded **Letter of Recommendation** for excellent performance during internship period.
  - Extended pipeline for **Adaptive Surface Reconstruction** in **C++** where a surface of an object is reconstructed from a set of scanned points by joining patches of **BSPline surfaces**.
  - Implemented research paper on **Quadrangulation using Spectral approach**.
  - Used **libigl** library to perform parametrization for BSPline surface fitting using **Barycentric Coordinates** .

- **Analyzing Effect of Growth Parameters on Properties of Quantum Dots** — IIT Bombay
  Prof. Subhananda Chakrabarty — *Nov 2018 - Aug 2019*
  - Analyzed samples of **InAs quantum dots** grown on GaAs substrate by Molecular Beam Epitaxy.
  - Studied variation of **Arsenic and Indium vapor pressure**, growth rate and growth temperature and its effect on physical properties such as **dot size**, **spatial distribution** and **optical response**.
  - Employed results from **Photo-luminescence Spectroscopy**, Atomic Force Microscopy(**AFM**), High Resolution X-Ray Diffraction (**HRXRD**), **Raman** Spectroscopy to perform the analysis.

Conference Publications

- **Anubhav Agarwal**, Abhijeet Aanand, Sanowar A. Gazi, Suryansh Dongre, Sritoma Paul, Shubham Mondal, Rishabh A. Dahale, Debabrata Dasa, Debiprasad Panda, Subhananda Chakrabarti **The effect of V-III Ratio on structural and optical properties of self assembled InAs quantum dots***

- Rishabh A. Dahale, Abhijeet Aanand, Sanowar Gazi, Suryansh Dongre, Sritoma Paul, Shubham Mondal, **Anubhav Agarwal**, Debabrata Das, Debiprasad Panda, Subhananda Chakrabarti **The effect of growth rate variation on structural and optical properties of self assembled InAs quantum dots***

* Submitted in SPIE Photonics West NanoScience+Engineering Conference, August 2019, San Diego

Technical Projects

- **RISC Processor** — IIT Bombay
  Prof. Virendra Singh(Course Project) — *Apr'19- May'19*
  - Developed a 16 bit 8 register **multi cycle microprocessor** to perform a given set of instructions.
  - Modelled architecture using **Finite State Machine** optimized for fast performance by executing tasks common to various instructions in parallel and hence reducing number of states.
  - Designed the **datapath** consisting of various entities such as ALU, Register File, RAM such that number of hardware components and clock cycles per instruction are minimized.

- **DRDO DRUSE** — IIT Bombay
  Unmesh Mashruwala Innovation Cell, IITB — *Nov' 17- May'18*
  - Conceptualized an **Autonomous All-Terrain vehicle** capable of following humans and avoiding obstacles as a part of a team from UMIC-IITB and successfully **cleared stage 1** of a three stage competition.
  - Responsible for implementing **depth sensing** capabilities and **computer vision** using **XBOX Kinect**.
  - Designed and built a **military grade unmanned drone** with stealthy features such as noise cancellation and capable of moving over air, land and water as part of a 6 member team.
  - Conducted thorough review of literature on noise cancellation to realize stealth capabilities and successfully designed a working model using **MATLAB** to demonstrate **Active Noise Cancellation**.

- **Institute Technical Summer Project** — IIT Bombay
  Electronics and Robotics Club, IIT Bombay — *May 2018- July 2018*
  - Built a **Smart headgear**-an IoT device to aid visually challenged people capable of reading and reciting text, identifying popular logos and giving recommendations based on results.
  - Responsible for building an **Android App** to control device and implementing wireless communication between headgear and app using **Sockets** and **Django** based server and client.
- **Seasons of Code** — IIT Bombay
  Web and Coding Club, IIT Bombay — *May 2018- July 2018*
  - Developed a **python** application to **identify music genre** of a given audio file.
  - Designed a deep **MultiClass neural network** in Python using Keras and SciKitlearn library.
  - Used **Azure Machine Learning Studio** for evaluating performance of various models.

Scholastic Achievements

- Pursuing **minor** degree in **Computer Science and Engineering**.
- Secured **All India Rank 397** in JEE Advanced 2017 out of **150,000 candidates**. (2017)
- Achieved **All India Rank 436** in JEE Main 2017 out of **1,200,000 candidates**. (2017)
- Awarded the prestigious **KVPY** Fellowship by DST, Govt. of India with **All India Rank 107** (2016)
- Qualified National Standard Examination in Physics (**NSEP**) conducted by Indian Association of Physics Teachers and certified for being among **top 1% candidates** out of 40,000 students. (2017)
- Bestowed with the National Talent Search Examination (**NTSE**) Scholarship by National Council of Educational Research and Training(NCERT) , New Delhi. (2015)
- Attended **Vijyoshi** Camp conducted by Indian Institute of Science Education and Research with an objective to promote interest towards scientific research among young generation. (2016)

SkillSet

- **Programming Languages**: C++, Python, VHDL, Java
- **Software and Libraries Used**: QtCreator, MATLAB, Origin, Quartus, NgSpice, Android Studio, SolidWorks, AutoCad, Visual Studio, libigl, CGAL, Tensorflow, Qt5, Pandas, SKLearn, OpenCV
- **Devices for Development**: Raspberry Pi, Arduino, TI CC3200 Launchpad, XBOX Kinect Sensor, ROBOTEQ

Relevant Courses Undertaken

- **Electrical Engieering**: Microprocessors*, Electromagnetic Waves*, Microwave Integrated Circuits*, Signals and Systems, Analog Systems, Digital Systems, Electrical Machines and Power Electronics, Network Theory
- **Computer Science**: Data Structures and Algorithms, Machine Learning in Remote Sensing, Remote Sensing and Image Processing*, Introduction to Computer Science
- **Statistics and Mathematics**: Data Analysis and Interpretation, Linear Algebra, Differential Equations, Complex Analysis, Probability and Random Processes*

*Courses marked with * to be completed by Nov' 2019.*

Positions Of Responsibility

- **Class Representative** — IIT Bombay
  Department of Electrical Engineering — *Sep 2018- Present*
  - Elected as Class Representative(CR) of sophomore Micro electonics batch in general elections of Department of Electrical Engineering.
  - Act as mediator between professors and students and address their academic related problems.
- **Mentor, XLR8** — IIT Bombay
  Electronics and Robotics Club — *Aug 2018*
  - Mentor of two teams participating in competition that involves building a land robot which overcomes various obstacles in minimum time.

Hobbies and Extracurricular Activities

- Wrote an article in Summer Blog of Insight, IIT Bombay describing internship experience and preparation for the same.
- Completed year long rigorous training for swimming under National Sports Organisation of IIT Bombay.
- Participated in Open Triathlon Championship consisting of sprint, swimming and bicycling.
- Enthusiastic about travelling, socializing, listening to music and photography.