Ritesh Kumar | **15D070033**
Electrical Engineering | **Dual Degree (B.Tech+M.Tech.)**
Indian Institute of Technology Bombay | **Male**
Specialization: Microelectronics | **DOB: 04/03/1997**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	6.59

PROFFESSIONAL EXPERIENCE

- **Edelweiss Securities Limited** | Trading Technology Team *(May'18-July'18)*
  - Designed **UX** and **UI** for easy access to **Transaction Cost Analysis (TCA)** report to help traders get actionable **insights** to enhance **trading** related **execution quality**, compliance and management reporting capabilities
  - Implemented **login authorization** and **dynamic forms** to query single day and multiple day TCA report based on date, account ID, portfolio and instrument with **download link** to summary file on **Django framework**
  - Constructed infrastructure for **logging errors**, warnings and regular django server info for future **debugging**

RESEARCH EXPERIENCE AND SURVEY

- **Data Driven Techniques to predict Performance Loss of PV Plants** | Masters' Thesis
  Guide: Prof. Narendra Shiradkar, EE dept. IIT Bombay *(Jul'19-Present)*
  - Developing **data driven techniques** for predicting the degradation rates & future revenues of solar PV plants
  - Building **predictive analytics** tools capable of handling **big data** for extracting the **performance degradation** rate (with confidence bounds) of solar PV plants from time series data of current-voltage(I-V) measurements
  - Implemented a **five parameter single diode model** for PV modules in Python that can predict the PV module power at **any irradiance and temperature** by extracting the parameters from the module datasheet
  - Utilizded Bokeh server to plot the I-V curve (with interactive sliders) by numerically solving the diode equation
- **PV Module Field survey in Leh** | NCPRE, IIT Bombay *(Jan'19-May'19)*
  - Collaborated with 2 others in survey of **7 days** to inspect solar plant installations and performance degradation
  - Surveyed **88 modules at 3 sites in Laddakh** region and carried out module and string level **I-V characterization**, IR thermography for **hotspot** detection and visual imaging to capture **cracks** and pyhsical damages of the cells
  - Calculated average performance degradation rate per year to be **1.42%, 3.32% and 3.97%** using MATLAB

MAJOR PROJECTS

- **Solar module mounting orientation** | Course: Design and eval. of PV power plants *(Mar'19-May'19)*
  - Determined the best possible orientation of solar panel for **maximum power output** in different regions.
  - Performed **parametric analysis on System Advisor Model software** by varying tilt and azimuthal angle
  - Concluded that optimal tilt angle is latitude angle and optimal azimuth is 180 in north and 0 in south
- **Portable Solar cum Vibration Energy Harvesting Phone Charger** | Design Lab *(Jan'18-Apr'18)*
  - Prototyped and tested working model of solar cum vibration charger with optimized size and performance
  - Designed a suitable AC-DC converter and a DC-DC Boost converter for vibration and solar circuit output
- **Power Amplifier design** | Course: Solid State Microwave devices *(Mar'19-May'19)*
  - Simulated a 2 stage power amplifier with **matching** & bias-T circuits with unilateral design approach in ADS
  - Designed, fabricated & tested the PCB using Vector Network Analyzer for **gain and bandwidth** specifications
- **Maze Solver** | Summer School of Code, WnCC IIT Bombay *(May'16-Jul'16)*
  - Implemented command line **Image Processing Project** on Python platform assisted by OpenCV library
  - Used thresholding, filters, contour extraction, and thinning (one pixel width) to get a **path from start to end**

POSITIONS OF RESPONSIBILITY

- **Teaching Assistant** | Course: Reliability and Failure Analysis *(Jul'19-Present)*
  - Developing an online portal using interactive Python library **Bokeh** & Jupyter notebooks that would provide the students **personalized random failure data** of various distributions for their course project **(Virtual Lab)**
  - Generated **artificial random data** for normal, weibull, lognormal **distributions** for modeling & simulation
- **Campaigning Coordinator** | Abhuydaya, Social Body IIT Bombay *(2016)*
  - Led volunteer weekends at schools for the underprivileged to instil **computer basics and career counselling**
  - Co-ordinated and volunteered ANTARCHAKSHU, St. Xavier's XRCVC's initiative with a motive to **demand** from the government and people **equal accessibility** to science education for **visually challenged people**

TECHNICAL SKILLS

- Programming Languages : **Python, C++**, VHDL
- Tools : MATLAB, SAM, Cadence Virtuoso, Quartus, ADS, Bokeh, Django, OpenCV

EXTRA CURRICULAR ACTIVITIES

- Bestowed with a **Black belt (1st Dan)** at an age of 12 in Shotokan Karate after regular training of 4 years *(2009)*
- Recieved **Gold medal in Badminton** inter hostel General Championship (11 hostels) in IIT Bombay *(2018)*
- Awarded **silver medal for the Street Play** "MANN KI BHADAS" in Freshmen cultural competitions *(2015)*
- Pursuing 50 hours official **German language course** provided by International Relation Cell, IIT Bombay *(2019)*