



Ritesh Kumar
Electrical Engineering
Indian Institute of Technology Bombay
Specialization: Microelectronics

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Dual Degree (B.Tech+M.Tech.)
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DOB: 04/03/1997

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

PROFESSIONAL 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
- Utilized 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 **Ladakh** region and carried out module and string level **I-V characterization**, IR thermography for **hotspot** detection and visual imaging to capture **cracks** and physical 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, Assembly
Tools & Libraries MATLAB, R, Cadence Virtuoso, Quartus, ADS, Bokeh, Django, PVLib, Pandas, Numpy

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)
- Received **Gold medal** in **Badminton** inter hostel General Championship (11 participants) 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)