Manu Mohan

Energy Science and Engineering

Indian Institute of Technology, Bombay

193170017

M.Tech.

Gender: Male

DOB: 15-06-1994

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	8.24
Graduation	Kerala University	College of Engineering Trivandrum	2016	7.47
Graduation Specialization: Electrical and Electronics Engineering				
Intermediate	CBSE	Chavara CMI Public SChool	2012	88.60%
Matriculation	CBSE	St. Thomas Public School	2010	9.6

Areas of Interest

Solar PV   **Battery Storage**   **Power Electronics**   **Electric Drives**   **Renewable Energy Integration**

Key Academic Projects

- **M.Tech Thesis -Energy management in battery coupled photovoltaic power plant**
  (Guide : Prof. Dayadeep Monder, IIT Bombay)   **[Jul'20 - Present]**
  - Reviewed different Solar PV - Battery systems their topology and energy management strategies
  - Modelling a battey storage for an existing grid connected Solar-PV plant in MATLAB/SIMULINK and case study has been done on Cochin International Airport's solar plant
  - Single diode equivalent circuit of solar cell has been studied and **MPPT controller** with a **boost converter** was also modeled in SIMULINK as initial step
    Future Work:
  - Model lithium-ion battery bank and implement an energy management strategy in SIMULINK.
  - Grid integration and performance analysis of the modeled system will be done

- **B.tech Project :Field analysis of high voltage systems using Maxwell software**   **[Jul '15 - Apr '16]**
  (Guide : Prof. Anu AG ,CET)
  - Adequate models for obtaining the field distribution are simulated which allows visualisation of water tree. Also dielectric loss and energy loss are calculated
  - Simulation of 33 kV surge arrester with grading ring was done and optimal diameter of grading ring was obtained for making Voltage distribution uniform

Relevant Technical Projects

- **A step towards green campus IIT Bombay**- Course Project   **[Sept '19 - Nov '19]**
  (Energy Resourses and Economics & Environment - Guide: Prof. Rangan Banerjee, IIT-B)
  - Determined the baseline energy consumption, analysed the technological options and proposed an action plan
  - 5% increase in the share of renewable energy was achieved through proposed measures
  - 7.32 Rs/kg and 6 Rs/kWh of average **cost of saved Carbon** and Cost of Saved Energy respectively for a 20% discount rate was obtained.

- **Simulation of practical three phase converters-** - Course Project   **[Aug 19 -Nov '19]**
  (Power Electronics-I -Guide : Prof. Anshuman Shukla,IIT-B)
  - Simulation of three phase diode bridge rectifier with and without filter capacitor and three phase thyristor based converter having RLE load at the output have been done on SIMULINK .
  - Parameters like **THD**, average dc voltage, peak-peak ripple in output voltage, DPF, PF have been analysed.The effect of source inductance was observed in output waveform

- **Optimizing of Total Cost of Water Pumping System for Village** -Course Project   **Aug 19 -Nov '19]**
  (Energy System Modelling- Guide : Prof. Venkatsailanathan R, IIT-B)
  - Minimized overall cost of water pumping system and optimized diameter of rising main pipe of solar PV based water pumping system so that it can satisfy the daily household needs of a village
  - Fibonacci search method was used to find the minimum cost for system and it was solved in MATLAB software due to the non linearity of equation
  - Optimized diameter of rising main was obtained as 60.55 mm at a total cost of Rs 464542

- **Power generation and load demand forecast for a grid-connected PV battery System *** [**Aug 20 - Present**]]
  (Renewable Energy Integration -Guide : Prof. Zakir Hussain Rather, IIT B)
  - Reviewed the literature on different methods of load demand and power generation forecasting
  - Implementing a **neural network** based regression technique for forecasting A-Day ahead demand and generation

Technical Proficiency

Programming Languages	:	Matlab, Python
Softwares/Tools	:	SIMULINK, NREL-SAM, Informatica

Relevant Courses

- **Power Electronics - I & II** : Power electronics devices, VSI and CSI, control techniques, Modelling of converters using state averaging techniques

- **Design and Evaluation of PV Power Plant :** Module design ,Irradiance and temperature effect, Performance assessment,Module testing (Field and Lab)

- **Energy Resources, Economics & Environment :** Simple payback period, Time value of money, IRR, NPV, Cost of saved energy, Energy balance construction

- **Electric Drives #:** Control of electric drives, DC motor drives, Induction motor drives, Synchronous and PMSM drives, Switched reluctance motor drives

- **Energy Systems Modelling and Analysis :** Interpolation, Curve fitting, Regression, Optimisation, Search techniques, Analysis of variance

- **Renewable Energy Integration * :**Trends in renewable energy integration,Grid code regulation, Energy storage, Forecasting of solar and wind energy

Work Experience

- **Associate Software Engineer , Accenture Banglore** [**Feb 17 - May 18**]
  - Worked as an Informatica developer with a team of 10 and implemented mappings and change requests.
  - **Experience in SQL-** Involved in daily data profiling checks on Oracle database
  - Handled and fixed 200+ defects in 1 year by using HP quality center and collaborating with onsite team

Positions of Responsibility

Company Coordinator for Institute Placement Team, IIT Bombay [**Jun 20 - Present**]

- One among 43 CCs selected out of 180+ application based on the overall performance of students from 23 disciplines and 7-degree programs
- Part of 40+ members, a 3-tier team catering to the on-campus placements of 1700+ students
- Targeted 50+ new potential recruiters consisting of many Indian and foreign-based organization
- Mediated between the students, institute and companies in order to maximize the benefits to all stakeholders

Trainer-Student Solar Ambassador Program, SoULS, IIT Bombay [**Sept 19**]

- Volunteered as Instructor for Solar Ambassadors Workshop and guided 30+ School students in making solar table lamp. Near to 1 million students participated in this event globally

Interview Coordinator for Institute Placement Team, IIT Bombay [**Dec 19**]

- Coordinated with a team of 250+ members for interviews of 1600+ students
- Assisted in conducting Pre-placement Talks and Tests for 15+ firms students

Online Certifications

- PadhAI: **A Hands-On Course on Foundation of data science** [**June '20- Present**]
  (Instructors : Prof. Mitesh Khapra and Prof. Pratyush Kumar, IIT Madras)
  Course with key leanings including descriptive and inferential statistics, probability theory and hypothesis testing

- **SQL for Data Science** an online course authorized by University of California, and Coursera [**Jun '20**]

Hobbies and Interests

- An active learner of trading in stock market and interested in understanding the trends in Indian market.

- Watching TV series, Movies and listening to music

* - Ongoing (Course and Project) # - Audit & Ongoing