WORK EXPERIENCE AND SURVEY

Edelweiss Securities Limited, *Mumbai*

Institutional Equities - Trading Technology Team

SUMMER *[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 and synchronize **trading** related **execution quality**, compliance and management
- Implemented **login authorization** and **dynamic forms** to query single day and multiple day TCA reports based on date, account ID, portfolio and instrument with **download** link to summary file on **Django framework**
- Created infrastructure for **logging errors**, warnings and regular django server info for future **debugging**

WINTER *[Dec '18]*

- Reviewed and reengineered the code base for plotting transaction execution time series graphs using python
- Introduced features like embedding the volume traded, hover for more details and multiple colour schemes for different trade algorithms to help traders compare their performance with the market more efficiently

PV Module Field survey, *Leh* *[June '19]*

NCPRE, IIT Bombay

- Collaborated with 2 others in PV module survey of 7 days to inspect plant installations and performance decline
- Surveyed 88 modules at 3 sites in Laddakh region and carried out module and string level I-V characterization, IR thermography to detect hotspots and visual imaging to capture cracks on the cells
- Calculated average performance degradation rate per year to be 1.42%, 3.32% and 3.97% using MATLAB

Teaching Assitant *[June '19]*

Instructor: Prof. Narendra Shiradkar, EE dept. IIT Bombay

- Developing an online portal for 40 students using interactive Python library Bokeh & Jupyter notebook that would provide them personalized random failure data of devices (Virtual Lab) for their course project.
- Generated artificial random data for normal, weibull, lognormal and exponential distributions with varying parameters for modeling & simulation.

RESEARCH AND COURSE PROJECTS

Data Driven Techniques for predicting Performance Loss in Solar Plants *M.Tech Thesis*

Guide: Prof. Narendra Shiradkar, EE dept. IIT Bombay [June '19]

- Developing data driven techniques for predicting the degradation rates & future revenues from solar PV plants using various Python libraries & PV performance data.
- Developing predictive analytics tools capable of handling Big Data for extracting the performance loss rate of PV plants from time series data of 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.

Solar module mounting orientation and axis tracking effect *[Mar '19 - May '19]*

Course : Design and evaluation of PV power plants

- 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 in northern, southern and equatorial regions for summers and winters.

- Concluded that optimal tilt angle is latitude angle and optimal azimuth is 180 in north and 0 in south
- Observed for equatorial regions optimal azimuth angle changed seasonally and axis tracking was effective

Image compression using wavelet transform algorithm *[Mar '19 - May '19]*
Course : VLSI Design Lab
- Implemented image compression using 4-taps, 2-D Daubechies wavelet transform and Huffaman encoding
- Synthesized the code on Quartus for Cyclone Altera FPGA using Nios II processor and SDRAM module
- Applied low pass and high pass filters (implemented using LUTs), followed by downsampling on 512 x 512 grayscale image to obtain LL, LH, HL and HH image components

Power Amplifier design *[Mar '19 - May '19]*
Course : Solid State Microwave devices
- 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

Modelling gesture control *[Oct '18 Nov '19]*
Course : Sensors in Instrumentation
- Modelled 3-D Gesture Control using ADXL345 Digital Accelerometer interfaced with Arduino board
- Estimated inclination angle of board w.r.t. three axes with an error of less than 5% and plotted it in real time

IITB-RISC Microprocessor design *[Oct '17 Nov '17]*
Course : Microprocessors
- Designed a 16-bit microprocessor with 8 registers having multi-cycle point to point communication infrastructure
- Synthesized VHDL code by integrating the controller-FSM and data path on FPGA

Portable Solar cum Vibration Energy Harvesting Mobile Charger *[Oct '18 Nov '18]*
Course : Electronic Design Lab
- 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

Maze Solver *[May '16 Jul '16]*
Summer School of Code, WnCC IIT Bombay
- 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

Campaigning Coordinator *[2016]*
Abhuydaya, Social Body IIT Bombay
- Led volunteer weekends at various schools for the underprivileged with a unified motive of circulating general awareness, computer basics and career counselling, with a team of 20-22 members
- Headed a 23 member volunteer team to HUMARA BACHPAN (National level initiative for children enforcement) in Bhajiwali slums, with a purpose of realizing the harsh situations of kids
- Co-ordinated and volunteered ANTARCHAKSHU, St. Xaviers XRCVCs initiative 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, Pandas, Bokeh, Django, OpenCV

RELEVANT COURSES UNDERTAKEN

- **Solar and Reliability**: Design and evaluation of PV Plants, Reliability and Failure Analysis of Electronic Devices
- **Analog VLSI** : CMOS Analog VLSI Design, Mixed Signal VLSI Design, RF Microelectronics Chip Design
- **Others**: Data Structure and Algorithms, Probability and Random Processes, Introduction to Quantum Mechanics

EXTRA CURRICULAR ACTIVITIES

- Bestowed with a Black belt (1st Dan) in Shotokan style Karate after regular training of 4 years *[2009]*
- Member of Gold medal recieving squad in Badminton General Championship among 12 hostels *[2018]*
- Awarded silver medal in the Street Play competition, Freshiezza (Freshmen cultural competitions) *[2015]*
- Pursuing 50 hours official German language course provided by International Relation Cell, IIT Bombay *[2019]*