Ratan Singh

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EDUCATION

Veermata Jijabai Technological Institute, Mumbai, India (VJTI) **Jul 2013 - May 2017**

Bachelor of Technology in Electronics and Telecommunication Engineering GPA – **9.42/10**, **3rd** in Batch of 73

- Relevant Courses - Engineering Mathematics I – IV, Discrete Time Signal Processing, Digital Image Processing, Probability Theory and Random Processes, Numerical Techniques, C++

PROFESSIONAL EXPERIENCE

CREDIT SUISSE AG, PUNE, INDIA **Jul 2017 – Present**

Machine Learning Engineer

SMEBot Aug 2018 - Present

- Developed the Credit Suisse's internal chatbot framework by developing custom language models, enabling six departments with different applications to use the system and reducing costs by ***850,000 CHF*** yearly.
- Implemented and trained the Text Ranking algorithms, Deep learning models and Neural Embeddings.

Automation of Impact Analysis of Stored Procedures May 2020 – Oct 2020

- Developed a web application using hierarchical lexical grouping to analyze the stored procedures in database and derive inter-relationship of tables in form of a directed acyclic graph.
- Automated the impact analysis due to modification of data / table structure to trace back all possible impacted tables and procedures and thereby reducing ***2-man days effort to a single hour***.

C2 Benchmarking of Loans Aug 2019 – Oct 2019

- Developed a quantitative model to benchmark the risk associated with loans against the bonds with statistically matching profiles and generated the risk profile replacing the current methodology of flat curve across the months and thereby improving the risk assessment by ***35%*** on average.

Digital Regulatory Reporting for Bank of England and FCA UK Jul 2018 – Dec 2018

- Collaborated with consortium of 6 European banks to produce a solution to industry issue of Regulatory Reporting, representing Credit Suisse globally as a software developer to help in creating a DLT based solution involving use of machine-driven machine executable regulations and thereby reducing the cost of reporting to ***1%*** of current cost.

Forex-Ops settlement using Distributed Ledger Technology Sep 2017 – Dec 2018

- Developed a Proof of concept for creation, netting and settling of Foreign Exchange trades for internal shared systems of Credit Suisse using distributed ledger technology to reduce the time and effort of process of auditing and reconciliation. Estimated reduction in cost of auditing process by ***50,000 CHF*** annually.

CENTER OF EXCELLENCE FOR COMPLEX AND NON-DYNAMICAL SYSTEMS, MUMBAI **May 2015 – Jun 2016**

Research Intern – Electromagnetism

Deperming and Degaussing May 2016 – Jun 2016

- Researched on modelling of novel series of coil systems and deperming protocols for demagnetization of ships and implemented the physical model of the same. Verified the practical results along with protocols in L&T premises, Navi Mumbai which deviated from **3.4%** from analytical values and were **8.6%** robust compared to traditional one.

Data Analytics Intern

Pro-active failure detection of inverters Nov 2015 – Dec 2015

- Developed Anomaly detection-based technique using the Gaussian probabilistic framework to predict the posterior probability of inverter failure by observing certain parameters of the inverter and predicted the time to fail (TTF) using Ridge Regression. Anomaly Detector had precision score of **0.92** and TTF had MSE of **13%**.

Electric Load Prediction and Segregation May 2015 – Jun 2015

- Developed algorithm for electric load segregation and electric load prediction using KNN and ARIMA. Generated the recommendations for user depicting the pattern of usage of electricity in order to minimize the electricity bill. Model estimated an average cost saving of **31%** using the recommendation pattern.

ACADEMIC PROJECTS

Forest AI

- Developed ubiquitous sensor network for detection of illegal deforestation using audio signal processing and identify the region of logging. System will immediately notify the nearest first responders over cellular network.

Machine learning framework for distributed Wireless Sensor Networks

- Developed a generic and scalable IoT framework for data acquisition and control of the distributed sensor network using FOG architecture and facilitated a machine learning framework on cloud to analyze the data uploaded by the sensor networks and control the supervisory action at sensor node using edge analytics.

SELECTED RESEARCH PUBLICATIONS

- **Design of Equidistant Hexagonal coil system for Demagnetization of Naval Vehicles** in *IEEE-GUCON 2019, Greater Noida, India*
- **Analysis of anhysteretic demagnetisation procedure of underwater vehicles** in *1st ICASTe –2018, Mumbai, India*
- **Optimization of Circular Coil Systems for Demagnetisation of Marine Vessels** in *IEEE – I2CT 2018, Pune, India*
- **Optimized Circular Coil Based Deperming Protocol of Naval Vessels Using Cage Systems** in *1st IEEE - ICICCI 2017, Greater Noida, India*
- **Current Controlled excitation based deperming protocol of naval vessels** in *4th IEEE–UPCON 2017, Mathura, India*
- **Race Track Coil Based Deperming Protocol using Cage System** in *22nd ASIAEM – 2017, Bangalore, India*
- **Hexagonal Coil Systems for Uniform Magnetic Field Generation** in *IEEE-APACE 2016, Langkawi, Kedah, Malaysia*

HONORS AND SCHOLASTIC ACHIEVEMENTS

- Two times recipient of Star IT India Award for Innovation in Credit Suisse India
- Scholarship holder from NM Foundation from 2014 to 2017
- Maharashtra government scholarship for being in top 1% in High School in 2013

EXTRA CURRICULAR ACTIVITIES

- Technical Reviewer for Python and Data Science books at Packt Publication, Birmingham, UK
- Instructor for *ML 101* – corporate training program for 20 selected employees across the Credit Suisse and taught implementation of Machine learning algorithms from scratch with basic knowledge of arrays and loops
- Presented in person projects Digital Regulatory Reporting and SMEBot under innovation stream representing India to Mr. **Jacob Sisk, CEO of Credit Suisse Labs**
- Corporate Supervisor for AI based research project with Vishwakarma Institute of Technology, Pune, India
- Took responsibility of Vice President of Technology Analysts Committee for year 2018 to represent and acted as single point of contact for the analysts across the Mumbai, Pune and Bangalore in Credit Suisse

SOFTWARE SKILLS

Languages: Python, R, C++, Java, MATLAB
Database: SQL
Web Development: HTML, CSS, JavaScript
Operating System: Windows, CentOS, RedHat, Ubuntu