Debmalya Pramanik

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Anticipating an engaging working environment where I can devote my knowledge and expertise, that will facilitate operating costs, improving speed and accuracy of a system.

—Work Experience—

Reliance Jio Platforms Ltd. | Data Analyst

October, 2016 — *present*

May, 2021 — Promoted as ***Manager***
Apr, 2020 — Promoted as ***Deputy Manager***
Jan, 2019 — **Transferred** to **Navi Mumbai, Maharashtra (India),** Reporting to **Brijesh Shah (Asst. Vice President)**
Oct, 2016 — Joined as ***Asst. Manager,*** at **Kolkata, West Bengal (India),** Reporting to **Sourav Raj (Deputy Manager)**

- Built an Unsupervised Learning Algorithm using *Self Organization Maps* (SOM or KSOFM), with a REST API back-end end (using *flask*) to **Predict User Movement** and **Mitigate Coverage Issue** by placing one or multiple ODSCs to improve per-user SINR.
  - Achieved about a **3 dB improvement** during development.
  - An improvement of **1.3 to 1.9 dB** is noticed during field test at Mira-Bhyandar JC.
- Design and mathematical modeling of a *Recurrent Neural Network Model (LSTM)* is extensively studied for replacing **Digital Pre-Distortion (DPD) for Linearization of Power Amplifier (PA)** to achieve Linear Characteristics of PA.
  - Power Amplifier (PA) model is being developed in MatLAB/Simulink (R2020b), and a **ACPR -45 dBc is attained** as per *3GPP standard specifications.*
  - The LSTM model is trained with a PA I/O data *at constant physical parameters* (like temperature) and a significant out-of-band signal reduction is observed.
- An algorithm is devised for **Pro-Active Load Balancing** by *Estimation and Detection* of over-loaded cells based on TA, Delta and Neighbour Cells Measurement Parameters.
  - Unhealthy Cells were identified by comparing the throughput of a cell based on all the devices latched, at a given period of time, with the actual or desired throughput.
  - Neighbour Information is fetched to find the sector which is not overloaded where the devices can be off-loaded.
- Building an algorithm for establishing **back haul line-of-sight feasibility** between eNode-B (i.e. cells or towers, signal sending end) and ODSC (i.e. outdoor small cells, signal receiving end).
  - AMSL (Above Mean Sea Level) Values between the starting location and ending location is obtained from the Open-Source SRTM Database, and HOP-Length is incorporated into the Elevation Heights, to minimize obstacle interruptions.
  - Fresnel Radius between the two points is calculated.
  - Based on the above two parameters, feasibility is calculated between the originating site and its' nearest three neighbours (i.e. the Customer Demand Point).
- Calculation of **Path Loss** and estimation of cellular network coverage. For this, an area is selected and divided into grids of $20m^2$, and a neural network model is used to calculate coverage grid-by-grid.

Key Achievements : Closely worked with Network Planning Team, to Design and Automate Line of Sight Feasibility Module which drastically reduced manual field interventions, and estimation of up-front costs.

—Research & Publications—

Reliable Estimation of Dissipation Factor of In-service Power Transformer — Debmalya Pramanik, Arijit Baral
International Conference on Condition Assessment Techniques in Electrical Systems *(submitted)* CATCON 2021

Technical Reviewer **: Step-Up for Leadership in Enterprise Data Science and Artifical Intelligence with Big Data : Illustrations with R & Python (hard copy available from Amazon, eBook is available on Kindle)**
Authored by, Shitalkumar R. Sukhdeve

Designing a Finger Based Heart Rate Monitoring System and Creating a Service Application for Data Transfer and Visualization using LABView Simulation Toolkit — *Bachelor's Thesis (2015-16)*
Neotia Institute of Technology Management and Science Diamond Harbor, West Bengal (India)
Project Partners : Jishnu Bhattacharyya, Mainak Ghosh, Priti Kumari

Layer wise Image Segmentation of Skin OCT using Random Walks — 15th June - 14th July, 2015
Indian Institute of Technology (IIT) Kharagpur, West Bengal (India)
Project Mentor : Dr. Debdoot Sheet (Asst. Prof. Dept. of Electrical Engineering, IIT Kharagpur)

Others

- Inverter Design Methodology and Efficiency of Solar PV Systems
- Series and Parallel Combination of PV Modules

—Skills—

Core Skills in Data Science & Analytic

- Python (pandas, NumPy, Scikit-Learn, SciPy)
- Statistics Analysis and Data Interpretation
- Machine Learning Algorithms – Regression, Clustering, PCA, K-Means, KNN
- Neural Networks – Primitive Networks (MP Neuron, Hebb's Network, Perceptron), Back Propagation Algorithms; and Deep Neural Network - Design and Modeling (using Keras with TensorFlow); RL with Self Organizing Maps (SOM)
- Optimization Methodologies – Linear Programming (or Simplex Algorithm), Single or Multi-Variable Optimizations, Multi-Objective Optimization Techniques
- Specialized Methodologies like Genetic Algorithms (GA), Multi-Objective Genetic Algorithm, Particle Swarm Optimization (PSO), Ant-Colony Optimization (ACO), Gradient Descent
- Databases : Apache Hive; MongoDB (*basic*); SQL (MySQL, Google Big-Query, Postgre-SQL (PSQL))
- Data Visualization Tools: Tableau
- **Data Engineering Skills:** *(basics)* MLOPs, DVC, ML Model Deployment and Monitoring

Electrical and Computer Science Engineering

- Web Frameworks for building REST API using Flask
- Virtualization of Application as Service using Docker
- Hadoop and Big Data for Handling Large Data and Running Analysis
- MatLAB & Simulink (Mathematics, Control System & Image Processing Toolbox)
- Mathematical Modelling of Control Systems
- Simulation Software: MultiSIM, PSIM

—Education Details—

(3 Yr.) M. Tech. in Power Electronics and Electrical Drives 2018 –2021

Indian Institute of Technology (IIT) Dhanbad, Jharkhand (India)

Final Year Project: D. Pramanik and A. Baral, "*Estimation of Dielectric Dissipation Factor of Power Transformer using Return Voltage Method*"

B. Tech in Electrical and Electronics Engineering 2012 –2016

Neotia Institute of Technology Management & Science Diamond Harbor, West Bengal (India)

- Held the position as **President** for the *social activities club* ***Ajantrik***, and organized events like cloth distribution, language day celebration and blood donation campaign.

- Joined as a **Member** of ***Kolkata Turning Lens Society (KTLPS)*** - a photographic club for like-minded individuals.

ISC (Science) 2010 –2012

Welland Gouldsmith School Kolkata, West Bengal (India)

ICSE (Science) 2008 –2010

Welland Gouldsmith School Kolkata, West Bengal (India)

—Certifications, Conference & Work-Shops—

Fundamentals of Machine Learning

University of Alberta, Albreta ML Institute | coursera

Advanced Data Science Specializations

IBM | coursera

- Fundamentals of Salable Data Science
- Advanced Machine Learning and Signal Processing

MatLAB and Simulink

MathWorks, MatLAB Academy

- MatLAB Fundamentals
- Introduction to Statistical Methods
- Machine Learning with MatLAB
- Deep Learning with MatLAB

Conference & Workshops

2020 **Research and Technical Challenges in Energy and Power Systems (RTCEPS)** Narula Institute of Technology

2020 **Control Applications of Renewable Energy Systems - Recent Trends and Future Aspects (CARESRTFA)** Invertis University

Open-Source Contributions

September, 2021 **Weather Ambassador Collaborator with Visual Crossing to build Python API Wrapper** Visual Crossing

March, 2021 **In Top *6% Contribution* for the Month in Stack Overflow** Stack Exchange