Nilesh Patil

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Education

Jun'16 – Dec'17 **University of Rochester**, M.S. in Data Science
Concentration in Computational & Statistical methods

Jul'09 – May'13 **Indian Institute of Technology Roorkee (IIT)** B.Tech. in Metallurgical & Materials Engg.

Projects

Jun'16 – May'17

Analyzing large transportation networks:

- Built a large time variant network using NYC's transportation data (1 billion+ taxi trips), to analyze travel habits of residents and determining pressure points in the network
- Used RNNs to predict demand at each node on dense, time variant geospatial transportation graphs with 2% rmse

Air quality prediction:

- Collected & processed data collected by federal agencies across various open data portals
- Trained Random Forest based ML regression model for predicting $PM_{2.5}$ level in any given locality
- Built multiple possible candidate models to contrast interpretability vs accuracy and achieved rmse of 6% (statistically significant linear model), 2.5% (GBM) & 0.98%(Random forest)

May'17 – Dec'17

Machine learning driven Galaxy Morphology prediction:

- Collected & processed data from Sloan Digital Sky Survey (multi TB image dataset) using a mix of SQL & python libraries
- Built deep neural networks to infer detailed galaxy morphology for 10 million+ galaxy images & created a content based image similarity implementation

Time series analysis driven Exoplanet Detection:

- Collected & processed time series data from Kepler Archive
- Built a time series classifier for exoplanet detection by training on simulated data
- Achieved accuracy of 70% with SVM, 85% using MLP & 92% for RNNs for Kepler's confirmed exoplanet database

Extracting text from degraded ancient manuscripts:

- Built a deep neural architecture for text extraction from heavily degraded ancient manuscripts

Professional Experience

Dec'14 – Jun'16 **AXA,** *Data Scientist/Sr. Analyst, Pune*

- Worked with business partners to develop machine learning based predictive analytics frameworks
- At AXA, we used Hadoop stack for storage + manipulation & R/Python/SPARK for analysis. Aggregation & Exploratory analysis was done using HIVE/IMPALA & R/Python
- Underwriting pipeline & KPI visualization using tableau
- Mortality rate error minimization using actual historical dataset from AXA's customers & transactions
- Promoting Data science community by conducting training sessions, best practices meetups, machine learning & big data tools workshops for AXA-US & AXA-India

Jun'13 – Dec'14 **AbsolutData Research & Analytics,** *Analyst, Gurgaon*

- ***Sensor & transactional data analytics:*** Developed multi stage semi-supervised machine learning driven model for prediction of engine failure in mining trucks
- Developed random forest based predictive models for oil quality checks in heavy machinery
- Worked extensively hands-on as R & Analytics resource for the project using R, Hive & Hadoop. The data varied from Sensor data (13 TB) to Gigs of human entered - work order & maintenance data
- Implemented an unsupervised learning algorithm which helped reduce false alarms for the mining major based on actual effect of alarms based on historical alarms & maintenance data

Marketing mix modelling: Predictive regression model for optimal marketing expenditure

Skills

Programming	Python, R, SQL, Scala, Julia
Toolset	Numpy, Pandas, Scipy, Scikit-learn, ggplot2, plyr, dplyr, Pypark, Tensorflow, Keras, Tableau for visualization, hands on experience with HIVE/IMAPALA queries, MapReduce using Python
Machine Learning	Experience in framing & solving business problems using machine learning techniques such as Random Forests, CNNs, RNNs, Graph convolutional networks, Support Vector Machines, GBMs, Linear Regression, Logistic Regression, Clustering Techniques (k-means, hierarchical clustering, knn etc), transfer learning