SAYON DUTTA

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SUMMARY

I am a Data Science enthusiast and Artificial Intelligence explorer and like to pen down some of the knowledge in my blog. I like exploring different datasets and try implementing machine learning algorithms as per the problem statement and also understanding the maths behind these algorithms and try to scratch build them in Python.

EDUCATION

2015	**Indian Institute of Technology, Kharagpur** B. Tech. (Hons.)

Self-studied Courseworks
Python for Everybody, a 5-course specialization by University of Michigan on Coursera
Introduction to Machine Learning - Udacity
Deep Learning - Udacity
CS231n - Convolutional Neural Networks for Visual Recognition
CS224N - Deep Learning for NLP
MIT 6.S094: Deep Learning for Self-Driving Cars
Applied Machine Learning in Python
Applied Plotting, Charting & Data Representation in Python

EMPLOYMENT

Jun 2016 to Current

Marax AI Inc. · Co-founder & Artificial Intelligence Engineer
Marax AI as a startup has worked on two different projects till date:
- Bestmatch algorithm, where we tried the approach of recommendation engine in a supervised way unlike the unsupervised learning approach.
- Created churn prediction module using Deep Learning which corporates LSTMs in Dynamic RNN framework to capture the time series behaviour of a user and predict their probability of buying and churning from a consumer based platform.

My tasks included data exploration, pre-processing, knowledge exploration, algorithmic research(which algorithm or combination of algorithms fits best as per the data) and it's implementation.

Skillset used : Python, SQL, Sklearn, Tensorflow

Feb 2016 to May 2016

ZipGo Technologies Pvt. Ltd. · Data Scientist
Multiple projects included:
- Created all reports and dashboards including user interface.
- Generated insights and used Kmeans clustering for customer as well as route segmentation.
- Used linear optimization to develop new route optimization and vehicle optimization based on google map distance, expected orders and sold outs.
- Created a Vehicle Time Optimisation dashboard from scratch to empower the operations team them with the knowledge of which route trip to be active the next day along with the addition of new or removal of existing vehicle [sample display link using dummy data].
- Developed a Linear Regression model to generate a relationship between Google
- ETA(estimated time of arrival) and real time arrival across two stop points and over a route.
- Developed map visualization from scratch to track new demand trips and requested routes in order to help the operations team to run cabs on new routes [sample display link using dummy data].

Skillset used : R, SQL, RShiny

Jun 2015 to Jan 2016

Deloitte India · Executive Analyst
- Professionally trained on software and tools including SQL, PL/SQL, Informatica PowerCenter, R, QlikView, Automation Anywhere along with testing on relational database.
- Involved in the project of SAP BPC (Business Planning and Consolidation) for our client which included analysis and testing of the cost and revenue inputs and estimation of their budget for future years.

Aug 2014 to Sep 2015

QuizWorks · External Content Researcher [Freelancer]
- Department : Content Operation and Gamification
- Researched and developed content for Prelims and National Finals of Ascent Mastermind 2014 and 2015, annual quiz competition conducted for engineers and many other National & State level quizzes.

May 2014 to Jul 2014

CropIn Technology Solutions Pvt Ltd · Data Science Intern
The project details are as followed:
- Crop water model for the region of Punjab and Gujarat by analyzing the weather and crop data.
- Data Analysis of the field data for predictive analysis of harvest w.r.t to different variables.
- Analyzing the issues incurred in the data, thereby data cleaning, reporting and visualization.
- Analyzing the utility of Google Glass in Agriculture for future breakthrough and developing the problem statement for that.

SKILLS

Python, R, SQL, PHP, Tensorflow, Pytorch, Machine Learning, Data Structures, Linux, Scikit Learn, IBM SPSS

PROJECTS

Jun 2017	**Diabetic Retinopathy detection using Convolutional Neural Networks**
	• Image Classification using Convolutional Neural Networks to classify between a normal retina and an affected retina by training on the fundus images using Tensorflow.
Apr 2017	**Text Summarizer**
	• Approach : Attention based approach on Encoder Decoder model
	• Word embedding/vectors were created using GloVe approach.
	• Encoder contained the sequence of detailed news article while the decoder was the corresponding summarised headline.
	• Applied attention on Sequence to Sequence model for the task of Text Summarizer using Tensorflow's raw_rnn. Not used Tensorflow's inbuilt seq2seq function. The reason behind this was to apply attention mechanism manually.
Mar 2017	**Siamese LSTMs to find Semantic similarity between two sentences**
	• Word embeddings/vectors were created using word2vec.
	• Two parallel Dynamic RNN LSTMs were trained, where one sentence was fed to one LSTM and it's paired sentence to the other one.
	• Output difference of both the LSTMs were subjected to a fully connected layer to output the probability signifying the strength of similarity between the two sentences.
Dec 2016 to Feb 2017	Churn Prediction and Intent to Buy using Recurrent Neural Networks
	• Time based sequence feed into Recurrent Neural Networks to capture time series behaviour of the user in order to predict the probability of next behaviour to stay on the platform and separately the probability of buying too.
May 2016	**Reinforcement Learning Test Project**
	• Implementation of Value-Iteration and Q-learning (from scratch) for a grid problem using R.
Jul 2014 to May 2015	Irrigation Scheduling
	• Learnt irrigation scheduling model and its utility in helping the famers/users to schedule irrigation
	• Developed the SQL database server and wrote programs in PHP for crawling the weather data to run daily calculation on the model of irrigation scheduling and store it.
	• Applied linear regression on these input signals (meteorological, soil characteristics and crop data) to predict the gap in water table depth required to be pumped in from external source.
	• Refined the output by correlating with the field sensors' data
	• Patent related papers and documents have been submitted.
May 2014 to May 2015	Market Integration and Information Efficiency of BRICS Nations (IIT Kharagpur)
	• Generated Capital Asset Pricing Model using Rolling Regression algorithm from data of MSCI World Index and stock indices of BRICS nations using R and IBM SPSS.
	• This helped in calculation of the delay i.e. the integrate which provided the insights whether BRICS market is highly integrated with the global market or not.

AWARDS

Apr 2015	IIT Kharagpur · Order of Merit (Technology) 2015
	• Awarded by IIT Kharagpur for achievements in extracurricular activities related to Technology
Mar 2015	TATA · TATA Crucible Campus Quiz 2015
	• Runners-up in the Regional finals of the world's largest International level Business Quiz held at Jamshedpur by TATA
	• Won prize money of 50,000 INR out of which donated 15,000 INR to CRY – Child Rights and You
Apr 2015	R.P. Hall of Residence, IIT Kharagpur · R.K. Brahma Cup
	• Best Outgoing Student - Technology
Jan 2015	Inter IIT Tech 2015 · Inter IIT Tech 2015 Biz-Tech Quiz
	• Captain of the team which won Gold by defeating 11 IITs in Inter IIT Tech 2015 Biz-Tech Quiz
Aug 2006	Derek O'Brien and Associates · All Asia Bournvita Quiz Contest 2006
	• Semi-finalist in All Asia Bournvita Quiz Contest TV round held at Kolkata

WRITINGS

Intelligent Signals (my blog)
- Intelligent Signals : Unstable Deep Learning. Why and How to solve them ?
- Intelligent Signals : Maths, Part 2 : Pan Digital Number
- Intelligent Signals : Maths, Part 1 : Introduction
- Intelligent Signals : Nuts and Bolts of Applying Deep Learning by Andrew Ng
- Intelligent Signals : Visualising Data

VOLUNTEERING

Jul 2011 to Apr 2013	National Service Scheme · Deputy Leader, National Service Scheme Literacy Improvement Group · Kharagpur
	• Taught underprivileged children of Gopali Village as a part of Literacy Improvement Group by NSS
	• Carried out Rural Development work in nearby areas of Gopali Village