Amitesh Sharma

M.Tech Machine Learning and Computing

Experience

July 2020–Present **Gaian Solutions**, *Data Scientist*.

1. Question Generation: Developed a system to generate MCQ questions, True or False questions and Descriptive questions (models based on T5 and GPT2) from a given text along with a automated validation model using a QA model(T5 based) to answer the generated questions to filter out unsatisfactory questions.

2. Video Summarization: Developed a model for video summarization(in text) to find context for ad placement. Bi-modal Transformer is used for Multi-modal Dense Video Captioning by applying the model in bidirectional manner through the video.

3. Bit yield optimization: Finding appropriate combinations of broadcasters which will deliver the file with the minimum cost within the given deadline and the cover the entire region selected by the user.

4. Break yield optimization: Generating a week's schedule for custom advertisement(region-based) so that the given contract does not fail (weekly, monthly, and yearly contracts) based on the number of impressions and generate maximum profit for the broadcaster. Used a probability based constraint formulation and Reinforcement learning model to generate future schedule for advertisement deal.

June 2019–June 2020 **Quantela Inc**, *Data Science Intern*.

Multivariate Time series Imputation and Forecasting:

A. Imputation of missing data: Compared GAIN - Missing Data Imputation using Generative Adversarial Nets and Multi-directional Recurrent Neural Networks for missing sensor data.

B. Forecasting for sensor data: Performed Multivariate Time series forecasting using Temporal pattern attention and GRU-D.

Created end to end solution for Multivariate Time series imputation and forecasting.

C. Univariate Time Series forecasting:

Created end to end solution for Univariate Time series forecasting using Neural Beats.

Education

2018–2020 **M.Tech**, *Indian Institute of Space Science and Technology*.

M.Tech Machine Learning and Computing, GPA – 8.63/10

2013–2017 **B.E.**, *Rajiv Gandhi Institute of Technology –Mumbai University*.

Computer Engineering, GPA – 7.78/10

Projects

August 2019–June 2020 **Adaptive traffic signal control using Deep Reinforcement Learning in a Generalized manner**, *M.Tech Thesis Project*.

Created a policy structure by network sharing for different topological road structures to reduce training time and get signal phases for large maps. This was achieved using multi-headed attention for co-operation amongst the traffic intersections and deep Q network for selecting an action for traffic signals.

January 2019–May 2019 **Comparative Analysis of LSTM and its variants on Part-of-Speech Tagging problem**, *Mini Project*.

POS Tagger was implemented using LSTM and its variants and comparative analysis was performed to determine which variant works best for the problem.

August 2018–October 2018 **Image segmentation using K-Means,Fuzzy C-means and Mean Shift Algorithm**, *Mini Project*.
Various techniques for image segmentation were compared with each other using the ground truth.

July 2016–March 2017 **Real time object detection, recognition and estimation of the price of the object**, *B.E. Major Project*.
A real time system which takes frames from web camera and detects and recognizes objects, for which the machine is trained, within the frame. The system predicts price range for the identified object and also provides purchase links for the identified object using vendor API.

Papers

April 2017 **Detection and Recognition of Objects and Providing Purchase links using APIs**, *Journal Paper*.
Acknowledged and Published by: International Journal of Engineering Science and Computing in Volume 7 Issue No.4 (April 2017).

Open Source Work

February 2020 **nbeats-forecast**, *Python library for Univariate Time Series Forecasting*.
nbeats-forecast is an end to end library for univariate time series forecasting using N-BEATS. This library uses nbeats-pytorch as base and simplifies the task of forecasting using N-BEATS by providing a interface similar to scikit-learn and keras.
Link: `https://pypi.org/project/nbeats-forecast/`

Achievements

December 2019 **Pune Urban Data Exchange (PUDX) Datathon**, *organised by Robert Bosch Centre for Cyber-Physical Systems @ IISC Bangalore*.
Member of the winning team for Pollution Exposure Data Analytics.
Contribution: Performed Seasonally Decomposed Missing Value Imputation using Kalman filter for missing time-series data and trained Neural Beats (`https://arxiv.org/abs/1905.10437`) model for univariate forecasting of PM 2.5 values.
Link: `https://cps.iisc.ac.in/pudx/`

Skills

Languages: Python, MATLAB, C, C++, PHP, SQL
Libraries: Numpy, Scipy, Pandas, Matplotlib, Scikit-learn, OpenCV, PyTorch
Technologies/ Tools: HTML, CSS , Weka

Certification

November 2019 **Deep Learning - Part 1**, *NPTEL*.
Verify:`https://nptel.ac.in/content/noc/NOC19/SEM2/Ecertificates/106/noc19-cs85/Course/NPTEL19CS85S31141482191053128.jpg`

May 2017 **Machine Learning**, *Stanford University – Coursera*.
Verify:`https://www.coursera.org/account/accomplishments/verify/EYD6A4M47SDV`

Personal Details

Mobile No. +91 7303863112
Email id amitesh863@gmail.com
Website `https://amitesh863.github.io/`
Network `https://www.linkedin.com/in/amitesh863`