PRATHAM NAWAL

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EDUCATION

B.E. in MANUFACTURING PROCESS & AUTOMATION ENGINEERING **[MPAE], NSIT DELHI. [Aug'15 – June'19(expected)]**
COURSEWORK - Robotics • Programming • Complex Network Theory •Mathematics • Statistical Quality Control

EXPERIENCE

Summer Research Intern, **IIIT**, New Delhi *June – Aug 2017*

Work under **Dr Tanmoy Chakraborty** on enlisted Research Projects: -

- Work to build an algorithm to combine classification & clustering for ensemble learning.
  - My role was to Code & implement the algorithm wherein result from various algorithms were combined in form of Matrices & improved Classification results were obtained by Ensemble Model.
- URL PHISHING DETECTION using frequence substring pattern.
  - My role was to work on to finding frequent substring patterns to prepare an edge list of common patterns in Links. Further, graphical interference will be carried out with an aim to build a system for URL phishing detection.

Undergraduate Student Researcher, NSIT, New Delhi *Feb – Present 2018*

Work under **Dr Swati Aggarwal** on enlisted research project: -

- Work on to build a system for lip reading using CNN and LSTM
  - My role is to compare different model and image based methods for geometric feature extraction of lips and then use different CNN and LSTM architecture to build more robust algorithm than current state of the art methods

Data Science Intern, Rolyte IT Services *Jan 2018 –Present*

- Building Machine learning models to predict different human diseases based on text and image analytics.
- Built a Flask Web framework to increase access for doctors in developing countries

ACADEMIC PROJECTS AND SKILLS

- **INSTACART MARKET BASKET ANALYSIS** *Aug 2017 – Sep 2017*
  - Built a prediction system of previously purchased products will be re-ordered in the user's cart based on order data of previous month using R programming with F1 score 0.76
  - Predictions were based on re-order probability and built an ensemble model of decision tree and naïve bayes.
- **HEALTHCARE- TEXT CLASSIFICATION** *Jun 2017 –July 2017*
  - Automated the process of classifying telephonic conversations of patients and the receiver at XYZ Health Services into 5 major categories and 20 sub categories.
  - Performed Sentiment Analysis of the patient's behaviour and using NLTK took-lit for text mining and used SVM model to reach an accuracy 90%
- **DEVANAGARI CHARACTER RECOGNITION** *Dec 2017 –Dec 2017*
  - Applied deep learning and designed a convolution neural network (CNN) that identified hand written digits with an accuracy of 98.11%
  - Used a variety of techniques like regularisation, Adam optimization , improving the accuracy of the model.
- **Object Detection using YOLO** *Dec 2017 –Jan 2017*
  - YOLO v2 is a pre-trained model which was applied on a dataset to identify object in the image.
  - A pre-trained model of Tiny Yolo was chosen over object detection using Contour plot and HOG descriptor.
  - Yolo model was applied for real time vehicle detection on a traffic video to detect Vehicles.
- **AGE DETECTION – TRANSFER LEARNING** *Jan 2017 –Jan 2017*
  - Trained a model to classify the expression of a person face on a dataset of about 36k images.
  - Different methods of image classification were implemented and evaluated namely CNN, combination of SVM and HOG Descriptor.
  - A pre-trained model of VGG16 was implemented on the dataset using SG optimization method. Transfer Learning for other pretrained model is currently being carried out to improve accuracy.
- **MACHINE LEARNING BASED BRAIN CONTROLLED SYSTEM** *Jan 2018 - Present*
  - Automated Classification of L/R Hand Movement using Advanced Feature Extraction and Machine Learning
  - Obtained EEG signal records and used them as a communication link between brain and the system

TECHNICAL SKILLS

- **INDEPENDENT COURSEWORK –** Machine Learning by Andrew Ng, Data Science toolbox, Python for Data Science, CS-229 – ML [Stanford University] , Complex Network Theory [IIT-K],Deep Learning Specialisation, Computer Vision for Visual Recognition
- **Programming Languages/Software:** Python Stack (numpy, pandas, sckit-learn, nltk, Tensorflow, Keras) , Data Visualization Stack (ggplot2, matplotlib, seaborn,Plotly) , C++ , R , RShiny , Github, Flask, LaTeX, SQL

EXTRA CURRICULAR INTEREST

- **Vice Chairperson** at IEEE NSIT – Largest Tech society of NSIT.
- **Student Mentor at NSIT** – Mentor on campus for help in college activities and co-curriculars, Machine Learning & Data science.
- **Gold Medalist** – Got Rank 1st in International Mathematics Olympiad in School .
- **Proficiency Award** – Subject Topper in A.I.S.S.C.E in English and Physical Education