

# SRIJAN SINGH

Bachelor of Technology (Final Undergraduate Year)  
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## SUMMARY

I am a full-time dedicated learner, seeking 5-6 months internship opportunities in Data Science and Backend Development with an aim at solving real-world problems of Computer Vision and NLP.

## EDUCATION

**PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur**

Bachelor of Technology in Electronics and Communication Engineering, 2017-2021 (ongoing) **CPI: 8.6/10**

**Birla High School, Kolkata, West Bengal**

Class 12th, CBSE Board, 2015-2017

**92.4 %**

**St. Aloysius' High School, Howrah, West Bengal**

Class 10<sup>th</sup>, CISCE Board, 2014-2015

**96%**

## EXPERIENCE

**Machine Learning Intern, InvestWell, Gurgaon (Remote)**

- August 2020

- Developed an intelligent captcha breaker to be used as a pre-filling tool in application forms. Applied morphological techniques, de-skew letters and transformed into a processing pipeline. Trained a custom DL model on processed letters of 28 classes to improve accuracy more than standard OCRs.
- Developed a continuous learning module for new incoming data and fine-tuning the pre-trained model and its integration along with the inference pipeline into the existing Flask microservice.

**Computer Vision Intern, Schnell Labs, Latvia (Remote)**

- April 2020

- Developed a Vehicle Detection and Counting model for an edge device, converted into tflite equivalent, both quantized and non-quantized. Processed frames from an IP camera and optimized the frames per second, finally deployed using Flask for streaming.
- Developed another approach to send frames from edge to aws S3 bucket, processed on ec2 machine and deployed using Elastic IP. Retrieve location of camera, region, time and maintained a database for the statistics of the vehicle counting after a fixed interval.

**Deep Learning Intern, Synergy Labs, Gurgaon**

- December 2019

- Worked on a Vision-aided Robot (6 DOF arm) to perform different tasks as communicated from server running on Nvidia Jetson Nano. Applied IP techniques to detect colour, circles, pattern, OCR, QRcodes and calculate transformation matrix to direct Robot's TCP to the target location on object so as to perform the designated task.
- Semantic Segmentation of metal surface defects based on pixel encodings, used U-Net and dice loss to generate masks on test images.

## TECHNICAL SKILLS

**Languages:** Python, C, C++, JavaScript, SQL, BigQuery, MATLAB Programming

**Libraries/Frameworks:** Pandas, OpenCV, scikit-learn, Keras, Tensorflow, PyTorch, NLTK, Django, Flask

**Software:** Anaconda, Spyder, Visual Studio, MATLAB (Image Processing toolbox, Optimization toolbox), Git, Android Studio, Linux

**Hardware:** Raspberry Pi, Arduino and its modules, NodeMCU

## PROJECTS

**traXee – A Smart E-Commerce Product Tracking Tool**

January 2020 – June 2020

- Used Flipkart Affiliate API to search, procure and maintain price and details of a particular product into firebase
- Scheduled a task to fetch and update price of all searched products using Django celery
- Mailing notification to users if the price of tracked products exceeds the saved threshold
- Deployed on EC2 instance and automated functioning of scheduler on a Django website

## **hatErase – A real time approach to abjure hate on Twitter**

February 2020 – May 2020

- Procurement and combination of open-sourced dataset of hate speech into one dataset of 2 lakhs rows
- Text Processing done to extract mentions, hashtags, links using regex, divided the dataset into 2 form – with stopwords and without stopwords(for LSTMs).
- Extracted features using CountVectorizer, Tfidf Vectorizer and fitted into MNB and Logistic Regression
- Developed a Django website to classify and track handles spreading hate in real-time using Firebase
- Future work consists of training on bidirectional LSTM or BERT to improve the model

## **F.O.R.I.D – Field Orbiting Robot to Identify Disease**

January 2020

*-Google Build for Digital India*

- Designed a robot F.O.R.I.D to orbit and predict diseased plants using Computer Vision, map diseased areas using a GUI and redirect to the app using local wi-fi (without internet)
- Developed an embedded system for capturing the plant image, segmenting the leaves, classifying the disease and pesticide spraying (lead-screw mechanism) according to the classified disease
- Storing data collected from the field to AWS SQL database via the app, used analytics to visualize trends and history of the crops using Flask API at the backend

## **Twitter Sentiment Analysis**

October 2019

- EDA on Analytics Vidhya dataset, text pre-processing using stopwords, WordNetLemmatizer, Porter Stemmer
- Extracted features using classical word embeddings, tf-idf vectorizer, WordNet and Glove for training
- Applied various Machine learning classifiers like RandomForest, SVM, Multinomial-Bayes, Logistic Regression
- Finally got best results on Logistic Regression till date with a rank of 51 out of 763 in the competition

## **Spam Detection Website**

September 2019

- Trained a deep learning model based on LSTM network after removing stopwords, punctuations
- Trained a machine learning classifier based on Multinomial Naive Bayes using NLP techniques (tf-idf) after stemming and lemmatization of text, got F1-score of 0.99
- Deployed the MNB model as a classification tool on a web-app using NodeJS

## **Smart Farm Monitoring System**

February 2019 – May 2019

- Classification of plant disease based on the 15 classes consisting of 4 plants and their healthy and diseased leaves dataset using Convolutional Network Networks (CNNs) using mobile
- Automate irrigation in the farm based on the soil moisture content, temperature and humidity of surrounding, warning system to farmer via SMS about declining humidity of soil
- IoT based daily weather forecast to the farmer on an app using an open source weather API

## **thisAble: Radio-Frequency Identification based bus boarding system especially for blinds**

October 2018 – May 2019

- Bus identification using RFID tags and announcement system at the bus stop.
- Real time database management of buses' coordinates and their routes to feed a mobile application
- A Mobile Application containing talkback features for the use of blinds
- Designed and developed an embedded system for real time tracking system of buses on google map

## **MOOCS AND CERTIFICATIONS**

- Deep Learning Specialization (deeplearning.ai) - 5 courses - (Coursera Credential IDs: GHJR8DKKYFC2, NFA4R385E78F, JPQLUL2TK5N9, GHJR8DKKYFC2, NFA4R385E78F)
- Workshop on Basic Programming with Python (1-month online workshop by FOSSEE IIT Bombay) (Credential ID - 189f2)

## **AWARDS AND ACHIEVEMENTS**

- Qualified to Grand Finale of **Smart India Hackathon Software 2020**, MHRD, Government of India.
- Qualified to the Regionals of **Google Build for Digital India 2020** for **FORID** in January 2020.
- Qualified first round of **Smart India Hackathon Hardware 2019**, MHRD, Government of India.
- Awarded Certificate of Appreciation in **HackFest Hackathon** conducted by JSCL on 12<sup>th</sup> January, 2019.
- Awarded Second position in **Jabalpur Smart City Hackathon**, held on 9<sup>th</sup> September, 2018.
- Awarded First Position in **Technovation** (an event of Abhikalpan, Techfest, IIITDM Jabalpur), held in March, 2018.
- Awarded Consolation prize in poetry competition held during **Hindi Pakhwada**, held in October, 2018.