

# Machine Learning Nanodegree Proposal

## License Plate Recognition

### **Domain Background:**

- Background information : computer vision,machine learning ,python
- Historically : firstly the OCR algorithm used for detection the numbers on the letter for know what area this letter belong.

## Problem Statement:

- With building the basic for algorithm to detect Characters and numbers , The algorithm can build up application like car license detection : used with radar if car speed break the limit speed , home plate number : for delivery project using drone the drone will use GPS to reach the desire destination to increase the efficient of algorithm with flying indoor for building with multiple flats use plate number recognition to find the flat , apply summation on some numbers written on paper by taking an image : or for use to convert from hard copy to soft copy.

## Datasets and Inputs:

Datasets: two kind of dataset

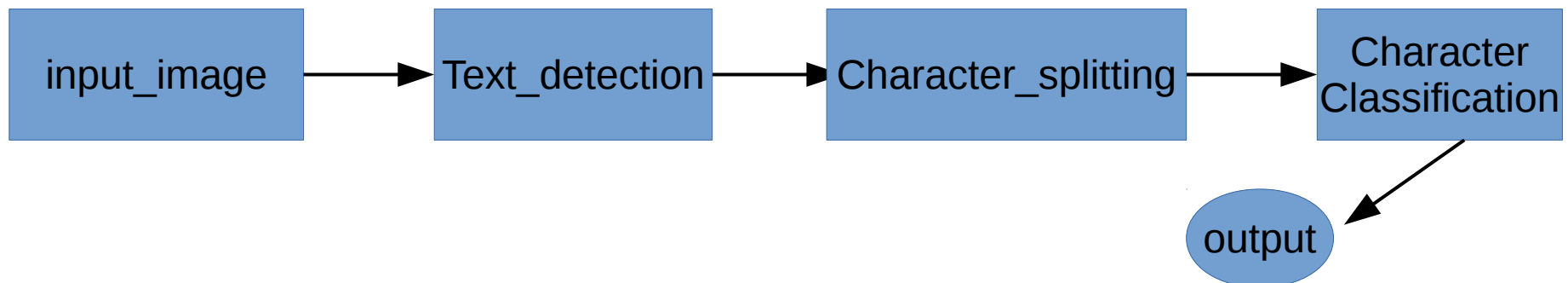
- \* First : different image of character and their label (not MNIST) for training classifier for character.

- \* Second : for this project will detect car license so other kind of dataset will be different image of car license plate labeled as  $y = 1$  and other image of things not car plate label as  $y = 0$

Input : will be an image containing a car license to be able to detect then extract the character in the license

## Solution Statement:

Start with input image the detect each group text then for each group and split to each individual character then classify each character,for car license find each car plate.



## **Benchmark Model:**

I couldn't find competition on kaggle about license recognition so my Benchmark for license plate detection be better than random guessing with AUC = 0.8 where be focus able to detect every license plate in the image. (Increase True positive)

For text classification my benchmark log\_loss = 0.5

## **Evaluation Metrics :**

There are 2 Evaluation Metrics will be accuracy for the number of plates detect on the image and the second is the detect text accuracy of corrected character.

## **Project Design :**

Start with build model supervised learning using Neural network or CNN to detect license plate with image dataset contain license plate labeled as 1 and image doesn't contain license label after learning the (fitting) the algorithm, the input image apply the algorithm with defined size of sliding window(filter) and stride to detect each license plate in the input image.

Then extract license plate to new image (ROI) then apply the second model for detecting character and Numbers will be also supervised learning algorithm with Neural network or CNN

Then computer Metrics for numbers of plates are detected and the output string license Number.