Text detection from image is a very challenging task due to lighting conditions, image quality, and non-planar objects etc. Here are some difficulties that have faced

Viewing angles: 1st I have faced Viewing angle problem where text can naturally have viewing angles that are not parallel to the text. So it makes the text harder to recognize.

Blurring: Some images looks blur problem. This also create problem in OCR based project.

Lighting conditions: The saturation effect of the the entire was not same. So this lighting condition also created problem.

Non-paper objects: It causes main problem in my work. The image contains many Non-paper objects such as watermark, logos, signs, etc. and these causes reflective problem. some letter has overlapped with this reflective.

N.B: When I was testing my model with not reflective image that time my model works very well.

To solve these problem I have applied different method.

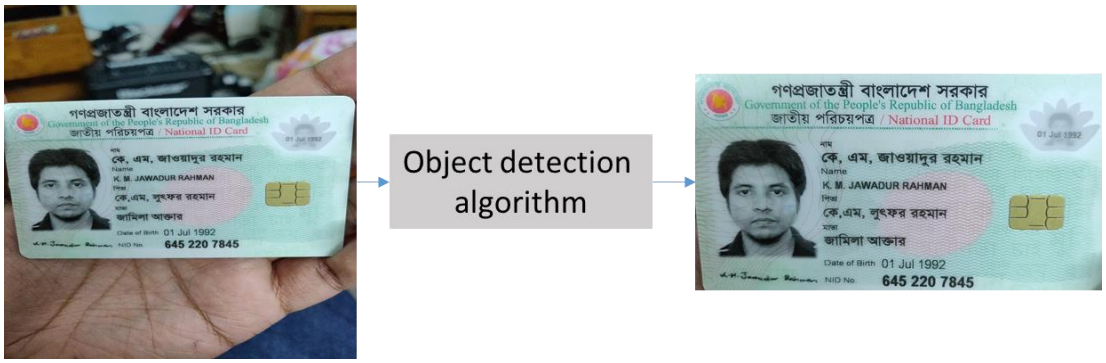
Easy-OCR:

Tesseract:

EAST - Deep Learning based method:

Heuristic Algorithm:

Before applying these method I have applied different pre-processing method that has been shown in code implementation. For changing the viewing angle using object detection algorithm. For this reason 1st I have detected the NID card region, crop this region. I have also applied OpenCV contour detection algorithm that did not give any advantage. So I have used object detection algorithm.



Tesseract:

Tesseract is an open source text recognition (OCR) Engine. It uses LSTM to extract text from any image.

(1)Doesn't do well with images affected by artefacts including partial occlusion, distorted perspective, and complex background.

(2)Poor quality scans may produce poor quality OCR.

EAST - Deep Learning based method

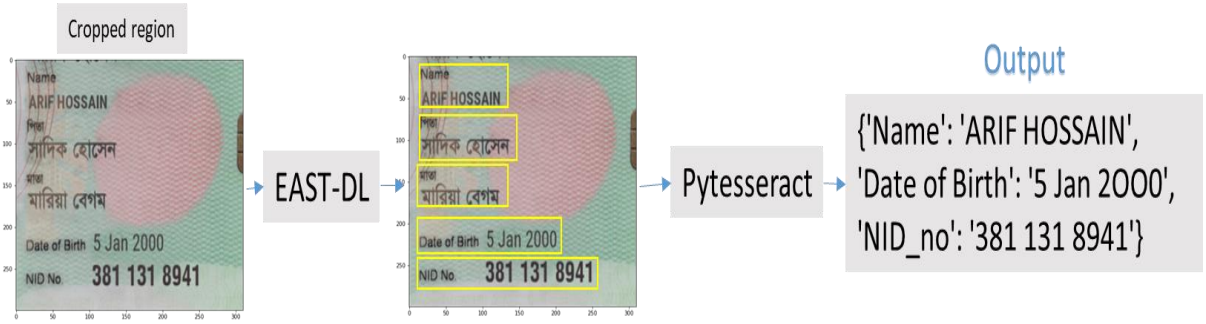
First I have detect the facial landmark using facial recognition. With respect to this facial landmark I have cropped only the necessary region that means name, age and NID no. region and all other part of the image is suppressed. Then I have applied EAST deep learning based for recognizing the requirement text. EAST(Efficient and Accurate Scene Text) text detector is a deep learning model, based on a novel architecture and training pattern.

It is capable of

(1) running at near real-time at 13 FPS on 720p images and

(2) obtains state-of-the-art text detection accuracy.

In the same process I have used for Easy-OCR implementation. Easy-OCR has the ability to convert files into searchable text, which allows for individuals to locate words easily.



Easy-OCR:

First I have detect the facial landmark using facial recognition. With respect to this facial landmark I have cropped only the necessary region that means name, age and NID no. region and all other part of the image is suppressed. Then I applied this crop image to Easy-OCR algorithm that gives me following output.

Heuristic Algorithm:

There is an another object detection method I have implemented where have first detected the location of name, age and NID no region using Sliding window method. Then I have applied Non Max Suppression(NMS) to crop only the required region where whole text was found. Once I have the ROI of the text area I could pass it into an algorithm that that is dedicated to performing Optical Character Recognition (OCR) which give good accuracy.