

Zense Recruitment 2021

Digit detection:

-Ashish Gatreddi

IMT2020073

About the project:

My initial aim was to work on converting a piece of handwriting to text form. Recognizing and classifying digits is a small-scale version of the true potential of this machine learning model. With the help of a software that converts handwriting to text form we can easily digitalize essays and notes, correction and editing of handwritten text will become much easier and convenient.

Tech Stack:

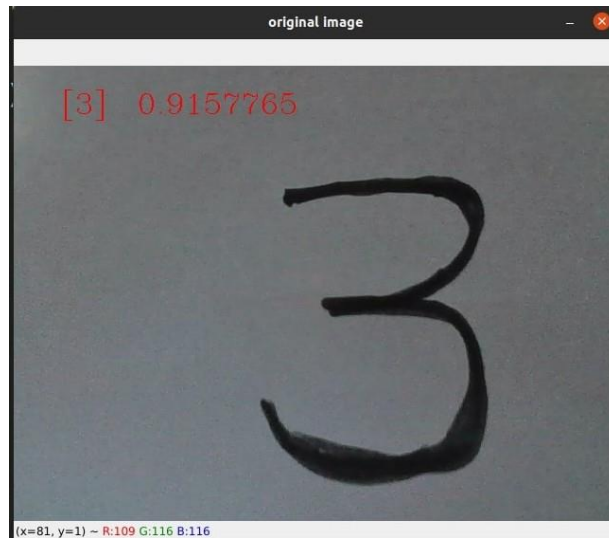
- Tensorflow: This is the core opensource ML library which makes the project possible.
- Keras: keras has multiple useful functions, we can make models, adjust attributes in training, choose various loss and optimizers and save the trained models.
- numpy: All the OpenCV structures are converted to and from numpy arrays, numpy arrays store processed data. “asarray” function converts our image input into a list.
- Cv2 (OpenCV): Cv2 facilitates visual input to the computer. Using cv2 functions we process the color image to greyscale. Cv2 is used to take in video-input, box the digit and display accuracy and result.
- Os: This module provides fuctions for creating and removing directories, fetching its contents, changing and identifying the current directory.

Progress:

A basic version of the project is completed. Currently, the model can detect well written digits, printed digits and digits displayed on a screen (e.g., phone screen) with consistency. Further improvement of this model can be done with the help of advanced ML concepts which will give the user better accuracy and consistency. I am yet to check out the various TensorFlow loss and optimizers to note down and see the performance of each one.

Few screenshots of tried examples are given below:





Future Aspects:

I am planning to work on barcode detection projects, as well as extend the current project to a one that identifies any handwritten ascii character. The sky is the limit for this project and with the improvements and discoveries being made in the field of AI each day, the possibility of instant conversion of any handwritten language to text (translated even) is nearing.

In general, I have explored various methods and workings of machine learning and gained a basic understanding of the inner workings of convolutional neural networks.

References:

OpenCV documentation, YouTube, Google, stack overflow, convolutional neural networks websites.