International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 07 | July 2018 www.irjet.net p-ISSN: 2395-0072

Analysis of Image Recognition in Android Devices

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Abstract – The Image Recognition simply refers to technologies that identify places, logos, people, objects, buildings and other several variables in images. users are sharing vast amount of data through apps, social networks and websites. Facebook can now perform face recognize at 98% accuracy which is comparable to the ability of humans. Facebook can identify your friend's face with only a few tagged pictures. This technology depends on the ability to classify Images. In fact, Image recognition is classifying data into one category out of many. Image recognition process are gather and organize data, build a predictive model and use it to recognize images. The aim of this article is to create an application for smartphones that can recognize any objects or images.

1. INTRODUCTION

This chapter is meant to give the user/reader helpful idea and an insight to the whole research. Most readers will like to get a grasp of the main ideas of a research paper before actually proceeding to read the whole research. This chapter clearly states the primary objective of the research and the main problem which is been researched. The backgrounds and the nature of the study are also highlight the purpose of the research. Several books and journals have been read by the author to have foundation knowledge on the concept Of the image recognition using android application.

People have always had the ability to recognize and distinguish the different objects, images and the entities. The Google introduced new API called the "Google Cloud Vision API". It has potential to Understand to the contents of an Images by using Google's Machine Learning platform. TensorFlow by Google, DeepFace by Facebook, Project Oxford by Microsoft are great examples of deep learning recognition systems.

2. BACKGROUND STUDY

2.1 What Is Google Cloud Vision API ?

The Cloud Vision API Is a Powerful Image Analysis. The Google Cloud Vision API Enable developers to understand the content of an image by encapsulating powerful machine learning models in an easy to use REST API. The Cloud Vision API quickly classifies images into thousands of categories, reads printed words contained within images it also detects individual objects within images.

The Google Allows the API to process individual pieces of an image separately and return the result quickly in unified format. You can submit an image to the Google cloud vision API and find out what is in the image. The one more benefit of the Google API is when making a request to process an image; Google gives us the capability to specify the types of analysis that should be on this image. Example is, a simple object identification, facial detection, landmark detection and many more analysis perform on the image. The one more great use of cloud API is it can also be integrated directly into the Android apps. Making Android Image Recognition very simple using cloud API. Also this is another way ,Google let us perform image recognition on android. Cloud Vision API is a multi-platform solution for image recognition, weather it's an Android app, iOS app, this API is available for image analysis. The cloud vision API has SDK support for java, Go Lang, Node.js, Python and most likely JASON format. There are many ways to perform Android Image recognition, Like OpenCV, OCR, Facial Recognition API's. but no one are accurate and lightweight as Google Cloud Vision API.

2.2 Features Of Google Cloud Vision API

LABLE_DETECTION - Execute Image Content Analysis on the entire image and return.

TEXT_DETECTION - Perform Optical Character Recognition (OCR) on text within the image (character limit applies).

DOCUMENT_TEXT_DETECTION - Perform Optical Character Recognition (OCR) on dense text image.

FACE_DETECTION - Detect faces within the image.

LANDMARK_DETECTION - Detect geographic landmarks within the image.

LOGO_DETECTION - Detect company logos within the image.

SAFE_SEARCH_DETECTION - Determine image safe search properties on the image.

IMAGE_PROPERTIES - Compute a set of properties about the image.

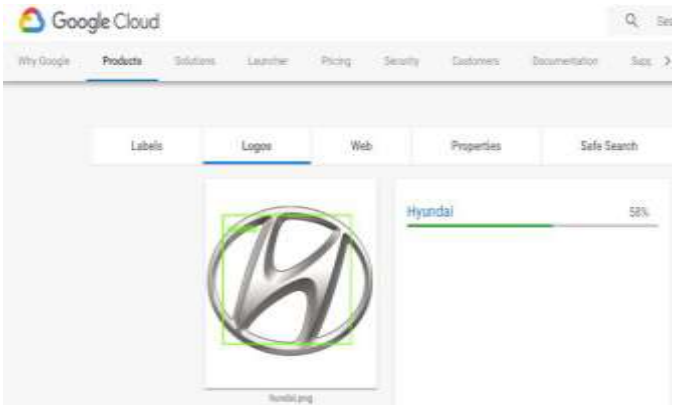
3. IMPLEMENTATION OF GOOGLE CLOUD VISION API

3.1 With Traffic Signals:

Now you were wondering how this is possible? And why ? I will explain this one by one.

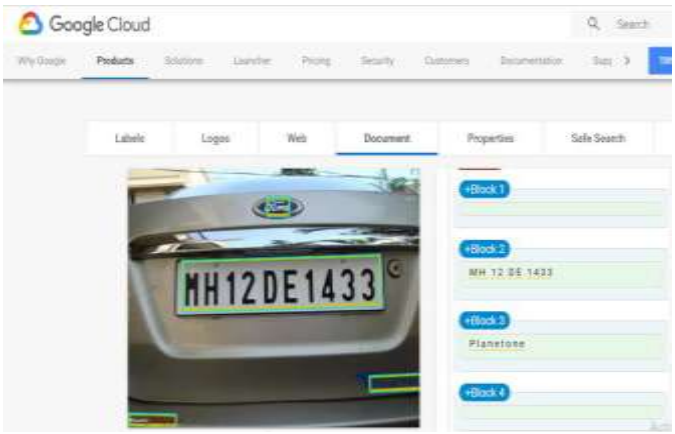
Now days violating traffic signal is major problem in India, Specially cities like Mumbai, Delhi, etc. IF we install a device with traffic signals or with camera we can take pictures continuously and sending to server where API is installed.

We can use both text detection and logo detection features of google cloud vision API to find correct owner of vehicle.



Here I saved image of hyundai logo then,

Open image in google cloud vision api, it shows accurate name from logo.



In above image there is vehicle registration number which is displayed in image, Through google cloud vision API we can accurately caught that number.

With the help of above two examples my thinking is, we can authenticate this number from database of RTO also authenticate car logo means it two level authentication. We can easily send fine message to respected user if he violating signal, parked his vehicle in no parking area, etc. Also this is helpful in the case of accident, if vehicle hit and run but with images are already captured. So police can reach to criminal person very fast.

3.2 For security purpose.

IF Police got information through RAW about peoples who are entered in city or place but hard to find. So this Google cloud vision API detects the multiple face detection support along with facial attributes we can match the crowd image with the image we got from security agencies. With the help of this we can easily find criminal or suspicious person for further inquiry.

Also police use this to solve local criminal cases.

3.3 In Swachh Bharat Abhiyan

With the help of same face detection technique we can achieve this very easily let see how.

The should camera clicks pictures and process with google cloud vision API and save with that image with server.

If person caught spitting of road or throwing garbage then application should warn him for next two times and then after last time fine message is sent to that respected person.

This will help to clean cities and Clean Our nation.

3.4 In Agriculture Sector

Now days every farmer have mobile I their hand also have 4g connectivity in all over India.

There is chances of cheating with farmers in case of buying wrong fertilizers for their crop but if they click photo of that box or packet and see from this google vision API the can easily examine the fertilizer and choose the best one for their crop.

If we use this image recognition technique in agriculture then it will be very beneficial for farmers.

What I think is, if we capture image through mobile then first recognize that image then classify that image among various patterns then identify characteristics of that particular item.

For example, lets assume farmer is uneducated but he only knew how to take picture from mobile, he have two farms lime and oranges. If lime started growing then farmer take picture and analyze that crop and quality of lime is accurate or not , is their any symptoms of any bacteria or any bad if not then that are ready to sell . like this image recognition play important role in the agriculture.

4. CONCLUSIONS

Google cloud vision API is one of the strong and easy to use API for faster results and it can play major role in image processing. It will definitely help and contribute to digital India.

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