

Detectophone Android Application

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ABSTRACT

In Today's world, everyone uses mobile in their day-to-day life. As per statistics, there are 6.38 billion smartphone users in the world, as of 2021 and this evaluates to around 80% of the world population. In consequence, we find ourselves having to use numerous applications for detection of face, image, language recognition, text to speech and other services. The choice of different applications for these numerous recognition presents us with a dilemma. By using a single application for all of these actions, time is reduced as it saves user's time and avoids the hustle of switching from one app to another. Single click over multi-click. Instead of working with multiple interfaces, each with its menus, options -use a single app and explore it. On the other hand, if we merge all the applications under one interface it will help the user to do different tasks in one application instead of using different applications. For achievement of this, we try to develop a Detectophone android application which is the combination of different detection relieving the users from their burden and challenging task of using multiple applications.

I. INTRODUCTION

Detectophone application is an android based application made using Java, XML and firebase ML Kit that helps the user to do tasks at one application instead of multiple applications. The app uses firebase which is a platform developed by Google (OPEN HANDSET ALLIANCE) for creating and improving applications for both mobile and web. Firebase, a backend-as-a-service (BaaS), manages servers and provides machine learning features that help us to develop our application. Firebase ML also comes with a set of ready to-use cloud-based APIs for common mobile use cases: recognizing text, recognizing images, and detecting faces. Unlike on-device APIs, these APIs leverage the power of Google Cloud's machine learning technology to give a high level of

accuracy. You simply pass in data to the library, which seamlessly requests models running on Google Cloud, and get back the information you need—all in a few lines of code. Detectophone application is an android based application made using Java, XML and firebase. Many people only know how to read and speak their native language and they face a problem in understanding different languages other than their own. In our application, there is a feature called language a translator that helps the user to translate language into different languages.

Detecting faces in the picture can be complicated due to the changeability of factors such as expression, pose, position and orientation, skin colour, presence of facial hair, differences in camera gain, lighting condition and image resolution. We provide a face detecting features to solve this problem.

People face difficulties in detecting the text in an images, plates and many more so they can put that image of our app and the image to text detector will detect the text on image. An image to text detector application uses machine learning technology to identify text on images. We have text to speech function that will help users to listen to what they seeing in the app or the command which they give.

II. PROPOSED SOLUTION

This study has been undertaken to make the best application for different detection but before introducing the improved app design, it is crucial to first analyze what is lacking in similar existing applications. This will help us fully distinguish the unique features of the proposed work. Mentioned below are some of the key observations made that heavily influenced the design of the app-

- Generally, when apps incorporate detection, either the picture has to be selected individually from the gallery or snapped directly taken from the camera. There is a lack of automation on this front.
- We have to use a different application for face,

text, language which create a hectic job to switch between these application.

- Time, space is also used in large amount for storage and performance.

III. FACE DETECTION -

Over time, the widespread use of smartphones has resulted in the exponential growth of data. Despite the recent advancements in computing, storage techniques, and image processing, there is still a demand for highly optimized information retrieval methods, particularly for smartphones. There are two ways to integrate face detection- A bundled model which is part of your app and an unbundled model that depends on Google Play Services. A face that is detected is reported at a position with an associated size and orientation.

Once a face is detected, it can be searched for indicators such as the position, gesture, figure eyes and nose. With the help of face detection, we can get the notification that they need to provide selfies and portraits or generate information from a user's photo. Because ML A kit can perform face detection in real-time. Image with dimensions of at least 480x360 pixels is necessary of face to be detected. Smaller images can be processed faster, so to reduce latency, capture images at lower resolutions, but we have to have image at least of 100*100 and for detection of the contours of faces should have a resolution of 200*200. If we get unacceptable results, ask the user to recapture the image, shown in fig.1

Images used can be used from different sources-

1. media. Image
2. File URI
3. ByteBuffer or ByteArray
4. Bitmap[3]



Fig.1-Detection of eye, noses

When we have to do face contour Detection, get a list of points for each a feature that was detected before. These points represent the shape of the feature Face Detection details how contours are Represented, shown fig-2.



Fig-2 Face contour

IV. IMAGE TO TEXT DETECTOR

The image Text sensor app detects the textbook from any images. This image may include images, number plates and numerous further. It'll help druggies to descry textbooks on any images by just clicking a single button. This operation uses a firebase ml tackle to develop operation. This app helps druggies in screening the presence of characters b y their shapes. The position of delicacy to checkup characters directly is grounded on how clear jotting is. Scanners are bettered to be ready to read different styles and sizes of text also as neat handwriting. For reorganization of text, input image must contain textbook that have sufficient pixel data. To fete textbook in an image using either an on-device or pall grounded model, run the textbook ecognizer as described below-

1. Run the textbook recognizer
2. Get a case of Fire Base
3. Vision Text Recognizer
4. Pass the image to the process Image

Document images vary from regular images in terms of their structural and spatial parcels. Hence, to effective reuse them, their textbook contents must be utilized. The term Document Image Analysis (DIA) is used to relate to the set of ways that perform a digital conversion, textbook or image discovery, and meaningful organization of information. One of the most generally used ways in DIA is Optical Character Recognition (OCR). OCR is used to covert the published or handwritten text present physically in

a scrutinized document, image or scene print to an applicable electronic format. Detection of text in image shown in fig-3 and architecture in fig-4.[4]

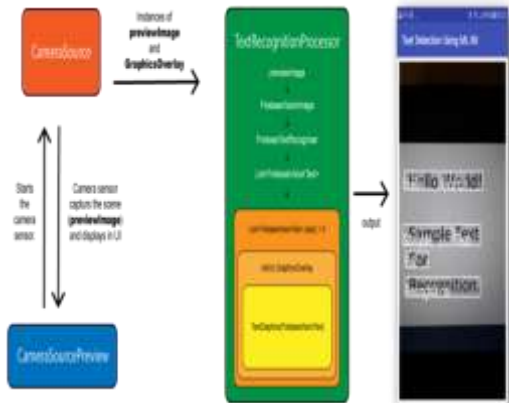


Fig-3 Image to text

The app is responsible for connecting all the individual modules. It passes the image to the Firebase Text Discovery Machine in the pall, retrieves the information and is also responsible for storing it into .txt lines.

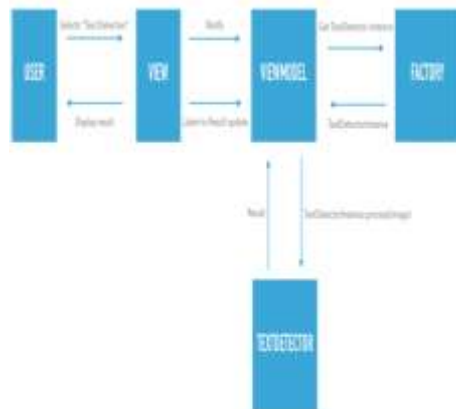


Fig-4 Architecture

V. LANGUAGE TRANSLATOR

Android apps in an important yet easy-to-use package. Language translator operation uses machine literacy technology. For Android Studio firebase provides a point known as ML Kit. In this app, firebase ML kit to develop this operation. Language Translator is a process to convert a languages into different languages. A translator takes a word or judgment and converts it into the language in which the stoner wants to convert it. It also detects and reports the error during

Restatement ML Kit recognizes text in further 100 different languages in their native scripts. In addition, Romanized text can be honoured for Arabic, Bulgarian, Chinese, Greek, Hindi, Japanese, and Russian. See the complete list of supported languages and scripts. You need the power of real-time capabilities of Mobile Vision's on-device models, or the of custom TensorFlow Lite models, ML Kit makes it possible with just many lines of the law, showing in fig-5.



Fig-5 Language translator

VI. TEXT TO SPEECH

Text to speech application provide natural audio of text that you have entered in. Text-to- speech is used as an accessibility feature to help people who have trouble reading on-screen text, but it's also convenient for those who want to be read to. Edit text where the user can write a word or sentence which they want to convert into audio form and there will be a convert button, when the user will click on this button it will convert into audio form.

VII. EXPERIMENTAL RESULTS AND DISCUSSIONS

After was success implementing the an app, experimental results showed that the general performance was satisfactory. The app style was created to be intuitive, forthright, yet functional. We made a application for different recognition. During the development and testing period, a few glitches and challenges were encountered, and are mentioned below.

- 1) **Unpredictable risks of Firebase Engine:** This was the only drawback of implementing Google's Firebase for the detection process. There were several factors found to have affected the accuracy in detection such as:

- Size of the text
- Font used
- Colour of text with concerning to the background
- Unidentified language detection
- Unclear picture, low pixel quality of an image to text detection.

This one obstruct the performance and accuracy of the application.

2) Inefficient Storage Techniques:

The app employs text file storage techniques to hold the extracted information. However, this is not sufficient for an app that may contain thousands of images. The access time increases and overall speed decreases considerably as the library size increases. This issue can be solved by implementing a hash table instead, as it has an access time of just $O(1)$. [1]

VIII. CONCLUSION

This paper elaborated on the design and construction of a comprehensive system for the Detection of Image, Language, text retrieval and searching based on the mobile platform. The main advantages of this system were that it facilitated time, user friendly, and also helped automate the entire organization process for the user, while simultaneously occupying the least amount of space.

This app helps users to easily detect faces and text on images.

- It will also help user to translate languages to their native language.
- No cost charges for using the application.

IX. FUTURE WORK

However, future work will look into improving this system, particularly in terms of efficiency, and by adding several other useful features, such as integration even with fewer pixel images, and even adding different more detection to an application that can be accessed easily on every system. Additionally, a concentrated study has to be made comparing the various state-of-art of ML Kit available for the Android platform, and the proposed system should implement the most accurate one. Lastly, the proposed system can even be extended to include other types of images, text language, we have to add different features for different type of users and their need and hence a complete solution can be developed and deployed.

Statement of Research Problem

For different detect application what is missing in other password managers available. It has also evaluated the human perspective and user interface

of password managers and types of password managers that are used. This paper looks at the human perspective regarding the use and non-use of password managers in regard to four key aspects—usability, trust, transparency and security. Also we have researched about best cryptography algorithm to be used for encryption of passwords.

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