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Blind's Eye: Object Recognition for Blind People

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Abstract: - In the current generation mobile play a huge role in every one's life .Total smart phone using population are people who can see, we can also make it useful for blind peoples by using features provided by Android Operating System. In today's world 75 %of population use ANDROID platform, this plays a huge role in choosing Android platform for our application. In Application we are trying to increase the usability of mobile phones by making application for Blind people. Object detection is a wide area of development. Recognizing objects by using image processing method can be utilized in multiple industrial as well as social applications. This paper is proposed to use object recognition tool for blind persons and give them audio/ vocal information about direction. We are capturing an object using the mobile camera and giving vocal instructions about the directions of an object. We need to train the system which includes adding new obstacles as objects into system's database. We are then doing pattern matching to search for objects in the camera view. Vocal information is the appropriate way of giving output instructions to the blind person. The reliability and accuracy of application is very high so that no misjudgment occurs in the application. So the quality of output in the prototype should not be affected.

Keywords BLOB: Binary Large Object, HSL: hue, saturation, and lightness, HSV: H stands for hue, S stands for saturation, and V stands value, HSB: H stands for hue, S for saturation, and B for Brightness, HSI: hue, saturation, and Intensity, ORB: Oriented fast and rotated brief.

I. INTRODUCTION

In the Current android system, there isn't any mechanism for voice command on android events like object detection System. In today's world Android platform is used by 75% of the total smart phones users so the motivation is that by using android platform we make it fruitful for blind people which also makes it beneficial for blind persons. So with the help of services provided by the application, interaction between users and application will be made easy by voice commands.

Blind's Eye will work as object recognition tool to inform objects in front of end user which are within range. Blinds Eye also make user friendly application based on android platform .Using this application we are able to give voice commands about objects in the path of blond peoples which can help them to navigate through premises.

A. Deliverables

1) All the objects in the image are detected and information is passed.
2) All the factors considered in calculating the final output will also be shown.
3) Also facility to add new unknown object's information in the database.

II. STATEMENT OF THE PROBLEM

To develop an android application, for blind people, that detects an image and analyze it from built in database and give vocal information and direction about the object.

III. LITERATURE REVIEW

Until now only some of applications exist for blind people which serve different functionality to help them in day to day life. But it has many technological threats still exist in the methods of background subtraction. Less work done on Application for Blind person but there are some existing applications:

A. Blinddroid wallet
B. Color detector
C. Blind bargain

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SR No	PAPER NAME	YEAR	CONCLUSION
01	Automatic vehicle counting and classification	2015	Blob algorithm is much efficient
02	Abandoned Object Detection via Temporal Consistency Modeling and Back-Tracing Verification for Visual Surveillance	July,2015	FSM (Finite state machine)can accurately identify static foreground objects
03	ORB: an efficient alternative to SIFT or SURF	_	ORB algorithm is better than SIFT or SURF

IV. OVERALL DESCRIPTION

A. *Product Perspective*

1) Users of the product specially focused on the Blind People
2) The user and device interaction is carried out using voice command.
3) The app will help the user to have better knowledge about the surrounding.
4) Hence In real time situations many important and sensitive scenarios can be easily managed with Blind's Eye

B. *Product Functions*

The main functionalities which the proposed system provides, described as an overall view, are the following:

1) Capturing the image though mobile camera as a user input.
2) Recognition of the objects from captured image.
3) Pattern making of objects from captured image.
4) Comparing between captured images and images in database.
5) Detection of the probable object.
6) Informing end user about the object through voice command.
7) *User Classes and Characteristics*

There will be two classes of users who will use our system. First class will be the admin. Admin will be responsible for adding information about new objects in the database. Accordingly, the patterns of the new objects are stored with its information in the database. The other user will be blind user who will use mobile camera to capture the image and extract the information available about the object in the database if the pattern matches.

C. *Operating Environment*

BLIND'S EYE will be implemented as an android based application which will process with image taken by end user. Operating systems supported is Android. This UI is very user friendly so that blind people should easily operate application.

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V. COMPONENT LEVEL ARCHITECTURAL DIAGRAM

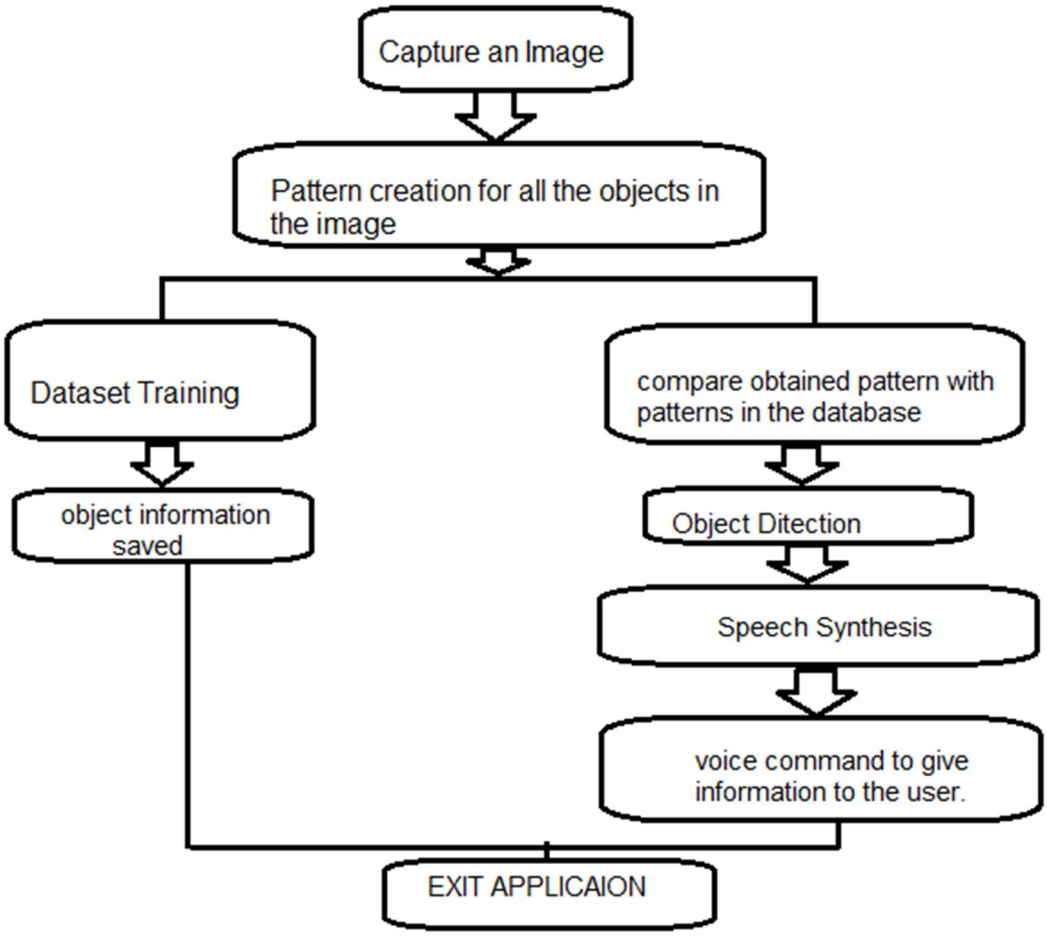


Figure 1 Component level architecture diagram

VI. TECHNIQUES OVERVIEW

A. Dataset training

Dataset training, loads the sample dataset images.

B. Blob analysis

Blob Analysis is a fundamental technique of machine vision based on analysis of contiguous image regions. As such it is a tool of choice for applications in which the objects being inspected are clearly discernible from the background.

C. HSV Model

HSL stands for hue, saturation, and lightness, and is often also called HLS. HSV stands for hue, saturation, and value, and is also often called HSB (B for brightness). A third model, common in computer vision applications, is HSI, for hue, saturation, and intensity.

D. Bounding box

In digital image processing, the bounding box is merely the coordinates of the rectangular Border that fully encloses a digital image when it is placed over a page, a Canvas, a screen or other similar bi-dimensional background.

E. Detection and recognition of object

This module detects and recognizes the object. And also tell about the object.

F. Speech synthesis

Speech Synthesis is the artificial production of human speech by machine on the basis of written input. A computer system used for this purpose is called a speech computer or speech synthesizer, and can be implemented in software or hardware products. A text-to-

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speech (TTS) system converts normal language text into speech.

G. ORB algorithm

ORB (Oriented FAST and Rotated BRIEF) is a fast robust local feature detector its aim is to provide a fast and efficient alternative to SIFT. ORB is basically a fusion of FAST key point detector and BRIEF descriptor with many modifications to enhance the performance. It computes the intensity weighted centroid of the patch with located corner at center. The direction of the vector from this corner point to centric gives the orientation. To improve the rotation invariance, moments are computed with x and y which should be in a circular.

VII. CONCLUSION

A. The application is going to help the person in daily life with flexible environment.
B. Algorithms are efficiently executed and used as per the requirement.
C. As we are working on Social cause, application will fulfil the requirement of blind person.
D. In other words, technically we are donating the eye to blind person.

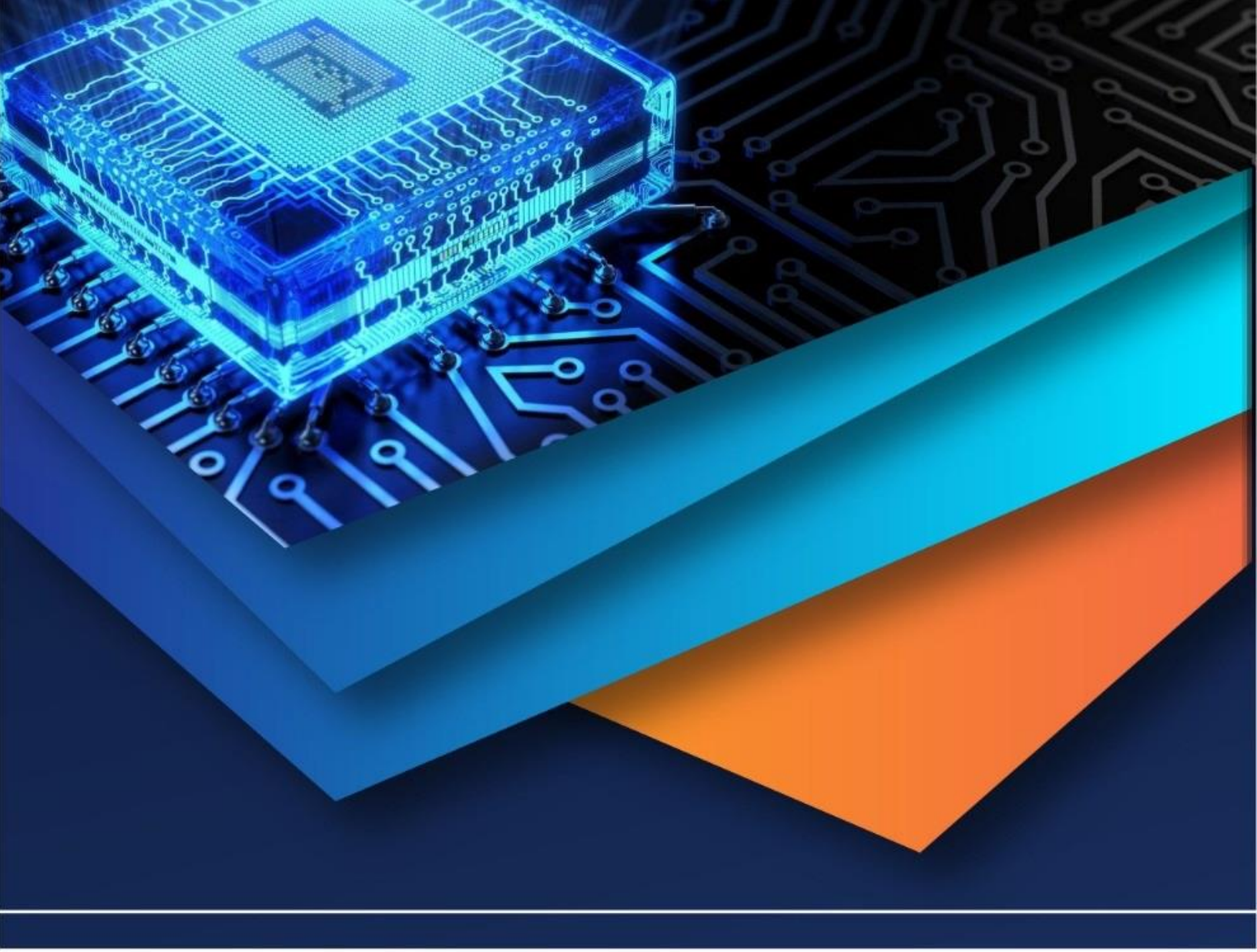
VIII. ACKNOWLEDGEMENT

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REFERENCES

[1] huai Zhang, Member, IEEE, Chong Wang, Member, IEEE, Shing-Chow Chan, Member, IEEE, Xiguang Wei, and Check-Hei Ho "New Object Detection, Tracking, and Recognition Approaches for Video Surveillance".May 2015
[2] Rublee Vincent Rabaud Kurt Konolige Gary Bradski Willow Garage, Menlo Park,""ORB: an efficient alternative to SIFT or SURF",California,2014
[3] Robert Bay, Tinne Tuytelaars, and Luc Van Gool ""SURF: Speeded Up Robust Features", 2014.
[4] Rahul Sukthankar, ""PCA-SIFT: A More Distinctive Representation for Local Image Descriptors", 2013.
[5] V.Kulkarni, J.S.Jagtap, V.K.Harpale, ""Object recognition with ORB and its Implementation on FPGA"2013
[6] Camera Network, L. G. Cowan and K. A. Li,"ShadowPuppets: Supporting collocated interaction with mobile projector phones using hand shadows, in Proc. ACM CHI, 2011, pp. 2707-2716.
[7] Harrison, H. Benko, and A. D. Wilson, ""Omni Touch: Wearable multi touch interaction everywhere", in Proc. ACM UIST, 2011, pp. 441-450.
[8] Benko and A. Wilson, ""Depth Touch: Using depth-sensing camera to enable freehand interactions on and above the inter-related surface", in Proc. IEEE Workshop ITS, vol. 8, 2009
[9] Mo, J. P. Lewis, and U. Neumann, "Smart Canvas: A gesture driven intelligent drawing desk system", in Proc. ACM IUI, 2009, pp. 239-243

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