

Color Identification Application for Blind Person

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Abstract - this paper intends to solve the problems of visually impaired persons to recognize colors. This mobile application can be helpful for blind person to know color of any object just by clicking a photo of that object using mobile phone. The color of image will be then known to them by audio message. Thus, for color matching of their clothes they do not have to be dependent on others. This application makes visually impaired independent.

Index Terms— color detector, blind people

I. INTRODUCTION

World Health Organization (WHO) reported that there are currently about 45 million blind people worldwide and every year this number is increases by 1 to 2 million. Assistive Technology (AT) is an interdisciplinary research area that allows finding solutions to the individual with disability by easing or improving the functions or the skills for accomplishing daily activities. Blind people have adopted daily manual procedures for color matching and color sorting. But still they face problems and have to be dependent on others for color matching of clothes. With new developing technology everyone has become addicted to mobile phones. For blind it can be possible to do color matching just by clicking a photo of clothes in their wardrobe. For taking a photo their will be a shortcut key in mobile phone by which they can take any photo by pressing that key. After the image is stored then information about color of image captured is known to user by audio voice. Thus by this method it will be easy and reliable for blind person to identify color.

II. DESCRIPTION

It is so easy for us to rely on colors to enjoy our activities and do our tasks that we often take this ability for granted. But without this basic ability, you would find that the simplest of tasks can become very difficult. There are, however, techniques and devices that can help you if you can't recognize colors. Below we look at the most common ones and discuss their strong points and issues. While three dimensional objects can often be easily identified by the visually impaired by touch, images and colors cannot be similarly identified, nor can identically shaped objects be distinguished from each other by touch. An acute problem occurs when the visually impaired attempt to distinguish bank notes of varying denominations, which often differ only by surface images, color and text. By use of cell phones blind people can take a photo of object and the color will be displayed by audio voice.

III. METHODOLOGY

I. PROTOTYPE DEVELOP FOR PHONE:

This paper describe the application developed for the various platform of mobile OS. First the application is design for the android OS than same application is developed for the other mobile OS like Windows Phone-8,i-OS, and Nokia X. The application starts up automatically after the phone operating system is booted up using the java snippets. The Android system initiates code in an Activity instance by invoking specific callback methods that correspond to specific stages of its lifecycle. When the user selects your app icon from the Home screen, the system calls the onCreate () method for the Activity that is declared to be the "launcher" (or "main") activity. This is the activity that serves as the main entry point to app's user interface. The activity to be used as main activity is defined in the Android manifest file, AndroidManifest.xml, which is at the root of your project directory. The main activity for your app must be declared in the manifest with an <intent-filter> that includes the MAIN action and LAUNCHER category. The application is featured in a manner that it can run in background while the user can get involved in any other features of his phone. To create a application to run in the background of other current activities, one needs to create a Service. The Service can run indefinitely (unbounded) or can run at the lifespan of the calling activity (bounded). To begin a service in the application a call to startService() which invokes the service onCreate() method and onStart() beginning running the service

Once the application is launched, the image is captured using a specified short cut key defined in the program. The application can be modified to perform the same task for the blind person by using a voice command. Then the image is processed by applying various filters for the proper setting of the brightness and contrast and sharpness. Capabilities of different mobile device capturing is different .Also by applying image processing filters with advanced multimedia supplements we can access and change pixel data of images.

On Asha 501 one can incorporate live camera viewfinder on either LCDUI form or canvas. The capturing of image woks on both actual device and on emulator which is part of Asha SDK1.0. In case of camera we are having a special syntax for image or video capturing. For audio message to be generated we need a player .Once a player for the viewfinder has been created, controls for actually placing it to some user interface needs to be provided and controlling its functionality, because player on its own do not do anything. It will just run and do something but user will not see anything and developer will be able to get any benefits.

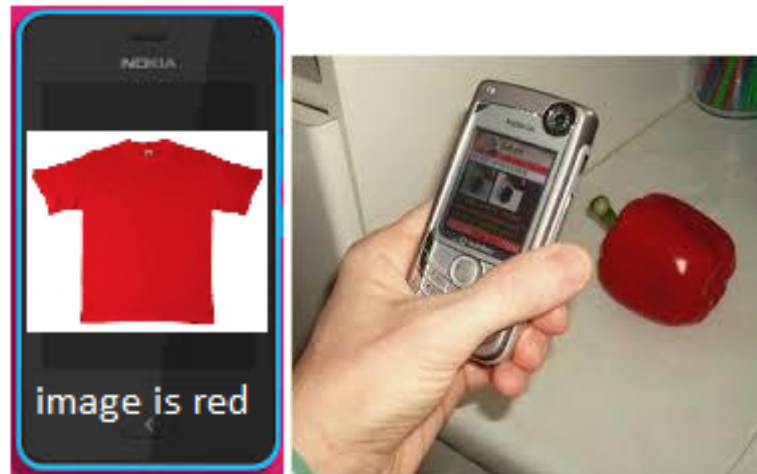


Figure 1

After having got the byte array in the memory next LCDUI image is created out of it with standard method create image. File connection is used to dump those bytes in disc. Here, a file is created and predefined location is used i.e., device gallery. After that just standard output stream and writing the bytes to file and closing the output stream in a file. Thus the image has been captured now. The captured image will be analyzed for color determination of image. Then the maximum amount of color from the whole image will be detected during analyzing process and will be given by audio message.

II. PROTOTYPE USING MATLAB:

Initially this application is developed on the matlab for the testing purpose.. In matlab there are various commands for image processing . The first step is to capture an image using camera. By using “preview vid()” function the camera starts in background .Then in command window we have to enter any value for the no. of snapshots we want to take and time delay between each snapshots. Then the camera automatically captures image and saves it. After that image is read by “imread()” function. The output will be displayed in the form of RGB matrix in command window. The elements of matrix are in decimal which can be converted in to hex using “dec2hex” function in matlab. So by this hex code we can identify the color of image.

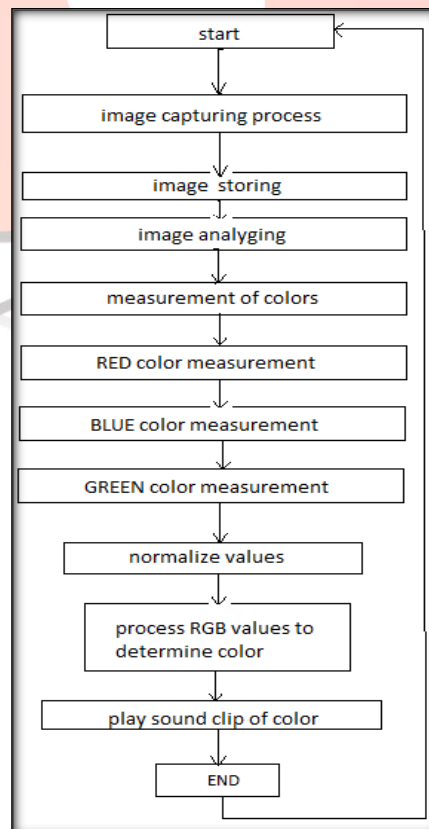


Figure 2

The above whole process is done on desktop but it's not possible to carry desktop everywhere. Thus to solve this problem there is a software “Matlab Mobile”. MATLAB Mobile is a lightweight desktop on your iPhone, iPad, or Android device that

connects to a MATLAB session running on MathWorks Cloud or on your computer. The app sends all commands to a remote MATLAB session for evaluation. Your device does not perform any calculations or store any workspace variables locally. The MATLAB Mobile application does not include a Workspace browser. The app uses the workspace of your MATLAB desktop session. To see the list of variables available in your remote session, use the `whos` command. When connecting to your desktop, you can also access any data files or run any program files that are on the MATLAB path on your computer. All figure generation happens in the MATLAB session, not on your device. For most cases, the static snapshots of all updated figure windows are sent to your device. See the documentation for exceptions. You can execute functions and scripts by calling them as you would from your desktop.

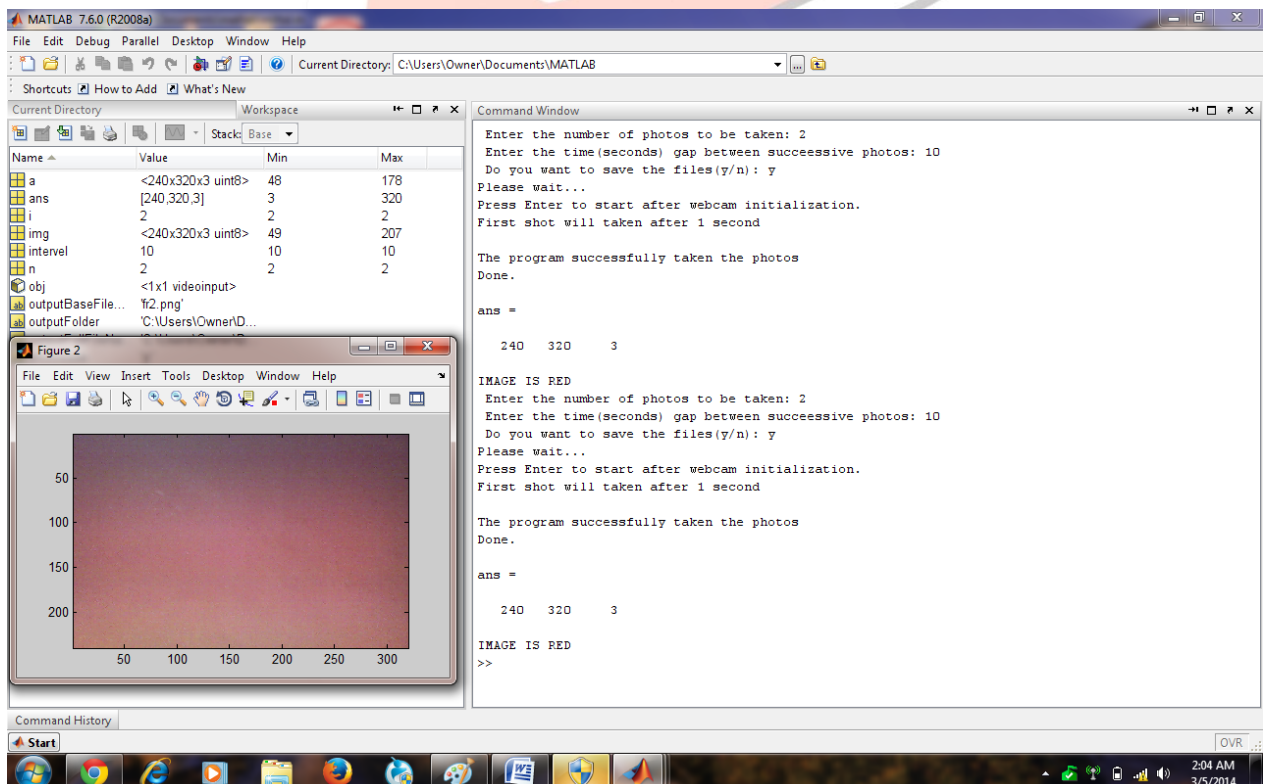
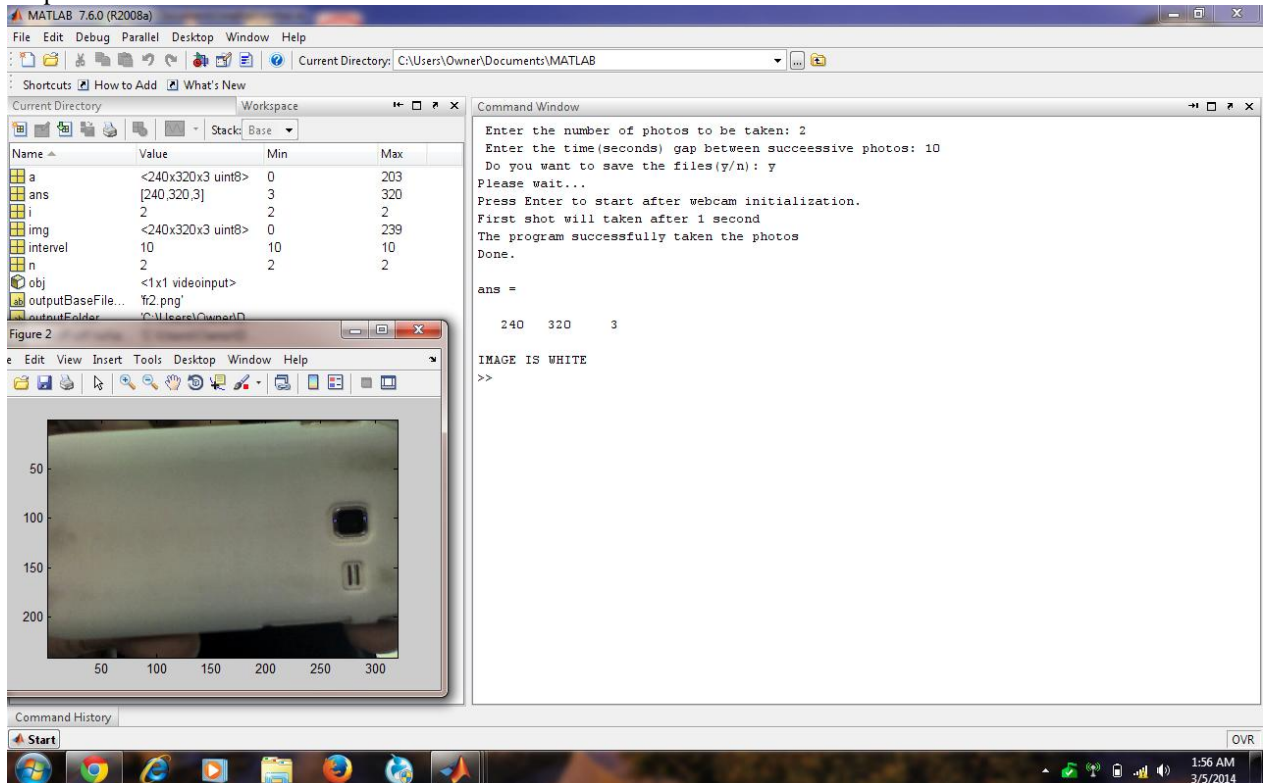


Figure 3

IV. ACKNOWLEDGMENT

Our sincere thanks to Prof. Mehul Jajal(Ass. Prof. in GEC BHARUCH).

V. FUTURE EXPECTED OUTCOME

This application is designed for android version. This functionality is possible in iphone using color identifier software but for the common person to purchase the iphone is not easy as it is very costly. In future we will try our best that each person can get this facility in that normal range phones.

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