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A Review on Recognition of Cloth Patterns for Visually Impaired People

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ABSTRACT: It is very challenging task to choose the cloths for the visually weaken persons. Automatic clothing pattern recognition is additionally a testing research issue because of turn, scaling, light, and particularly expansive intra-class design varieties in the patterns of clothes. There is need of developing a system which would be helpful for the visually blind people to recognize the cloths. The proposed system can be developed with application of Top Hat and Bottom Hat Transform, for the pre-processing of the image analysis, Curvlet transform for edge detection using Matlab software and hardware Raspberry Pi, State Vector Machine (SVM) for classification of clothes.

KEYWORDS: Cloth Pattern Recognition, Visually weaken persons, SVM (Support Vector Machine), Top Hat, Bottom Hat transform, Curvlet transform.

I. INTRODUCTION

Vision impairment or vision loss, is termed as the decreased ability to see any object and this kind of problems are difficult to resolve by usual means, such with the use of glasses. Some additionally incorporate the individuals who have a diminished capacity to see since they don't approach glasses or contact focal points. Visual impedance is regularly characterized as a best redressed visual sharpness of more terrible than either 20/40 or 20/60. The term blindness is utilized for finish or almost entire vision misfortune. Visual impedance may cause individuals challenges with typical day by day exercises, for example, driving, perusing, mingling, and strolling.

The most widely recognized reasons for visual impairment all around are uncorrected refractive errors. Refractive mistakes incorporate myopic, far located, presbyopia, and astigmatism. Waterfalls are the most widely recognized reason for visual deficiency. Different clutters that may cause visual issues incorporate age related macular degeneration, diabetic retinopathy, corneal blurring, adolescence visual impairment, and various diseases. Visual hindrance can likewise be caused by issues in the mind because of stroke, untimely birth, or injury among others. These cases are known as cortical visual weakness. Screening for vision issues in kids may enhance future vision and instructive accomplishment. Screening grown-ups without side effects is of questionable advantage. Finding is by an eye exam.

The World Health Organization (WHO) appraises that 80% of visual weakness is either preventable or reparable with treatment[1]. This incorporates waterfalls, the diseases waterway visual deficiency and trachoma, glaucoma, diabetic retinopathy, uncorrected refractive mistakes, and a few instances of adolescence visual impairment. Many individuals with noteworthy visual weakness advantage from vision restoration, changes in their condition, and assistive gadgets.

Visual impairment or visual impedance is a condition that influences many individuals around the globe. This condition prompts the loss of the profitable feeling of vision. Overall more than 160 million individuals are outwardly impeded with 37 million to be visually impaired[1]. The requirement for assistive gadget was and will be persistent. There is an extensive variety of route frameworks and apparatuses existing for outwardly hindered people. The visually impaired individual really prerequisites and distinguish objects. The world wellbeing association anticipates that this number will increment in the coming years. This paper proposes the outline and builds up a convenient system which can be very



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useful for the visually impaired or blind person to choose the clothes and patterns. About 90% of the world's outwardly impeded live in creating nations.

II. PROBLEM DEFINITION

There are a few basic issues for matching clothes. Initially, individuals see a protest be the same regardless of even vast changes in the ghastly structure of light reflected from the question. (On the other hand, objects that reflect identical spectra are often reported as being of different colors, depending on lighting conditions and color adaptation state.) Thus, object colors decided from a camera picture may not generally compare consummately to those detailed by a human observer. Besides, shadows and wrinkles might be confounded as a component of the surface examples or symbolism of the garments and in this manner cause blunders. Thirdly, the pictures of garments can be imaged from subjective review bearings. Techniques for coordinating examples require the information match of pictures must be design pivot invariant. Finally, many garments have outlines with complex pattern and various hues and colors, which increase difficulty of identifications.

III. OBJECTIVES

The objective of the proposed system is given below.

- To identify and summarize the different methods used for classification of cloth patterns.
- To propose a system this can do the accurate classification of cloth patterns.
- To demonstrate the uses of Curvlet transform for edge detection and State Vector Machine for classification of cloths patterns.

IV. LITERATURE SURVEY

In literature, the problem and the previous techniques of clothing pattern detection is described.

Faiz. M. Hasanuzzaman et al, have proposed system to automatically recognize banknote of any currency to assist visually impaired people. This is likewise a camera based computer vision technology. This system has features like high accuracy, robustness, high efficiency, ease of use. This framework is hearty to conditions like impediment, revolution, scaling, jumbled foundation, enlightenment change, wrinkled bills, and furthermore killing false acknowledgment and can manage the client to appropriately and accurately center at the bill to be perceived utilizing speed up powerful features (SURF). Acknowledgment and can direct the client too legitimately and accurately center at the bill to be perceived utilizing speed up robust features (SURF) [2].

DimitriosDakopoulos and Nikolousbuilt up a vision substitution system for travel aid for blind. Out of the three main categories of navigation systems (Electronic Travel Aids, Electronic Orientation systems, Position Locator Aids) here the focus is on Electronic Travel Aids In all these three frameworks the requirements of visually impaired individuals are considered yet there is a need to likewise consider the need of an assistive framework for the partially blind individuals. The primary range where a visually challenged individual faces an issue other than the activity signals is in a material shop for choosing garment of wanted hues without the assistance of a moment individual. The proposed assistive framework here portrays the same [3]. In this framework the surfaces are broke down utilizing mapping systems on the subspace embedding's proposed a surface portrayal structure to delineate surface patches into a low dimensional surface subspace. In common surface pictures, textons are ensnared with various variables, for example, turn, scaling, perspective variety, enlightenment change, and non-inflexible surface distortion. Mapping nearby surface patches into a low dimensional subspace can ease or kill these undesired variety factors coming about because of both geometric and photometric changes. We watch that surface portrayals in light of subspace embeddings have solid protection from picture disfigurements, in the interim, are more unmistakable and smaller than conventional representations.



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XiaodongYang et al, built up a framework for blind people to choose garments in light of fabric example and hues in a material shop freely. This is a camera based framework that can perceive dress examples into four classes (plaid, stripped, designs less, and unpredictable) and distinguish 11 hues: red, orange, yellow, green, cyan, blue, purple, pink, dark, dim and white [4].

Hasanuzzaman proposed a framework to automatically perceive banknote of any money to help outwardly hindered individuals. This is additionally a camera based PC vision innovation. This framework has highlights like high precision, strength, high effectiveness, usability. This framework is powerful to conditions like impediment, pivot, scaling, jumbled foundation, enlightenment change, wrinkled bills, and furthermore killing false acknowledgment and can control the client to appropriately and effectively center at the bill to be perceived utilizing Speed Up Robust Features (SURF) [5].

Dakopoulos and Nikolous built up a vision substitution system for travel aid for blind. Out of the three fundamental classes of route frameworks (Electronic Travel Aids, Electronic Orientation frameworks, Position Locator Aids), they concentrate on Electronic Travel Aids [6]. They have exhibited a proficient computer vision based to coordinate garments with numerous hues and complex examples to help outwardly disabled and visually impaired individuals by recognizing both example and shading data. To deal with complex surface examples and lighting transforms, they join procedures utilizing the Radon change, wavelet highlights, and co-event grid for design coordinating. To make the algorithm more efficient, they further developed a simple edge-based pattern detection method. The example coordinating is performed for the pictures with surface examples. The assessment comes about on garments datasets show that our strategy is hearty and exact for garments with complex examples and various hues. The matching outputs are provided to the user in audio format.

ShuaiYuana et al, have presented a paper titled “Clothing matching for visually impaired person. Technology and Disability. Here they have explained about the disabilities of a visually impaired person, how one faces the difficulties in day to day life etc. Also, they have discussed about the technological revolution yet developed technologies to overcome such disabilities and difficulties faced by the visually impaired persons [7].

V. ARCHITECTURE OF PROPOSED SYSTEM

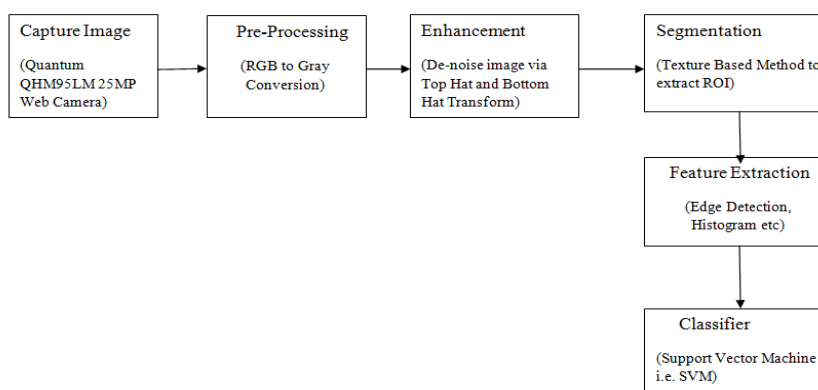


Figure 1:- Block Diagram of Proposed System

As shown in above figure 1, for capturing the images of the cloths here we are using the Quantum QHM495LM 25MP Web Camera. The captured images are the dataset of the system on which we are performing the proposed system.



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After capturing the images the next step is pre-processing.

- **Pre-processing:-** Image pre-processing typically denotes a processing step transforming a source image into a new image which is fundamentally similar to the source image, but differs in certain aspects, e.g. improved contrast. According to the above definition, pre-processing results in changing the brightness of individual image pixels. This step includes the physical transformation of the RGB and the gray scale image.
- **Enhancement:** - Enhancement is used to remove the noise from the signal and image. It is used to enhance the quality of the image. The advantage of the top hat and bottom hat it gives the precise output and it preserves edges while removing noise.
- **Segmentation:** - Segmentation is used for the segmentification of the given image into number of pixels for the further process here we are using the texture base method for the segmentation.
- **Feature Extraction:** - Here for the feature extraction we are using the curvlet transform. Curvelets are a non-adaptive technique for multi-scale object representation the curvlet transform is a multistate directional transform that allows an almost optimal non-adaptive sparse representation of objects with edges. The idea of Curvlet transform is to decompose the image into sub bands i.e. to separate the object (image of an object) into series of disjoint scales.

Classifier: -For the classification purpose we are using the SVM (Support Vector Machine) classifier here. The classification of the images is done using the SVM classifier. The SVM is the discriminative classifier which is defined for separating the hyper planes.

VI. CONCLUSION

There exist numerous patterns of clothes nowadays. Choosing clothes with different patterns is a challenging task for visually impaired people. They have to do the same with the help of family members or friends. It is a social issue for them. Thus, we propose a system that helps impaired people choose clothes easily without taking any help of others with the use of Image Processing technique with Raspberry Pi, and Matlab software.

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