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Cloth Pattern reorganization using Voice Commands for Visually Impaired people

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Abstract: Choosing clothes with complex patterns is a challenging task for visually impaired people. Previously some systems were developed for helping blind people in the reorganization of cloth patterns (color identifying, clothing matching). But those systems were unable to identify clothes with multiple patterns. So the existing texture analysis methods mainly focused on textures varying with distinctive pattern changes, they cannot achieve the same level of accuracy for clothes pattern recognition because of the large intra-class variations in each clothes pattern category. To overcome the above said problems, in this paper an efficient algorithm is proposed for the systems which can be dedicated for the visually impaired people, improves the selectivity and locality in the multi cloth pattern reorganization
Keywords: clothing pattern recognition, Radon descriptor, global and local image features, texture analysis, visually impaired people.

I. INTRODUCTION

In daily life, people need to find appropriate clothes to wear. This is a big challenging task for blind people to choose clothes with suitable color and pattern. Mostly they depend on their family members. Previously some systems were designed for helping the blind people, there are genre classifications and cloth recommended system. The drawback in the above methods is they cannot recognize cloths automatically. Some research had done on the texture recognition [2], which focused on 2-D image transformations. Due to lack of invariance in the geometric transformations these approaches cannot effectively represent the texture images with large change in the viewpoint ,orientation and scaling .So a proposed algorithm is designed for recognizing the cloth patterns automatically by considering three parameters for the texture classification by recoizing the multiple instances of the same textures. The proposed algorithm extracts both structural feature and statistical feature from image wavelet sub bands and uses some hybrid techniques such as random signature[3], GMM, Edge detection SVM and SIFT[5] which is used to recoize the multiple patterns selecting and locating the patterns automatically. SIFT is used to capture the structural information of texture, because of the robustness to photometric and affine variations**.**

II. REVIEW OF LITERATURE

Assistive systems are being developed for different kinds of visually impaired people to improve the life quality and safety of such people including indoor navigation and way finding, display reading, banknote recognition, rehabilitation, and many more. But previously some systems were designed for helping the blind people, there are genre classification, cloth recommended system and color tags. Later Yuan developed another method for matching a pair of cloths. The drawback in the above methods is they cannot recognize cloths automatically. FAIZ .M. Hasanuzzaman proposed a system to automatically recognize banknote of any currency to assist visually impaired people in. This is also a camera based computer vision technology. This system has features like high accuracy, robustness, high efficiency, ease of use. But in all these three systems the needs of blind people are considered but there is a need to also consider the need of an assistive system for the blind people. The main area where a blind person faces a problem is in cloth shop for selecting clothes of desired colors without the help of a second person. The proposed assistive system here depicts the same.

III. PROPOSED WORK

The proposed work is for developing an assistive system to provide an aid for the color blind people in selecting clothes in a cloth shop of different colors, where the assistive system that is proposed here would help the color blind customer in the cloth shop to select clothes of different colors independently. Below are the different modules of the assistive system.

A. Inserting Item Samples

The clothes in a cloth shop has to been entered in the system along with its attributes, for the system to be made usable in the final

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stage the database must be made available and all the items in the shop must be entered with the description of attributes for each item. The number of attributes can vary for each item depending on the clothing category. The system can vary its category according to the requirement and the availability of various categories. Also with the attributes the image of each item is kept in the database.

B. Speech Command Input

Once the system is made available with the data, that is, the item sample images and its attributes the system now can be used by the color blind customer. The color blind person can now specify his/her requirements to the system through speech input, so through speech the user can interact with the system, the voice recognition by the system is done by a probabilistic algorithm called the Support Vector Machine (SVM), using this algorithm the immediate results can be seen on the display screen, thus it immediately processes the recognized speech input.

C. Conversion of Input to Character String

The user interacts with the system via speech input, the speech recognition algorithm, before displaying, has to process the input to transform the speech input to a form that is in which further processing can be done. For this purpose the input has to be converted to character string format. Once the input is converted to character format the command obtained is analysed. According to the analysis the items from the database are selected to display as the final result.

D. Global and Local Feature Identification

The speech input after getting converted to character string format, in the analysis of the command the global and local features are to be identified among the features mentioned in the command by the user via speech input. The feature can be categorized through three parameters such as Radon Signature, STA and SIFT, which can be used for the selecting and reconstructing the cloth automatically.

IV. RESULTS

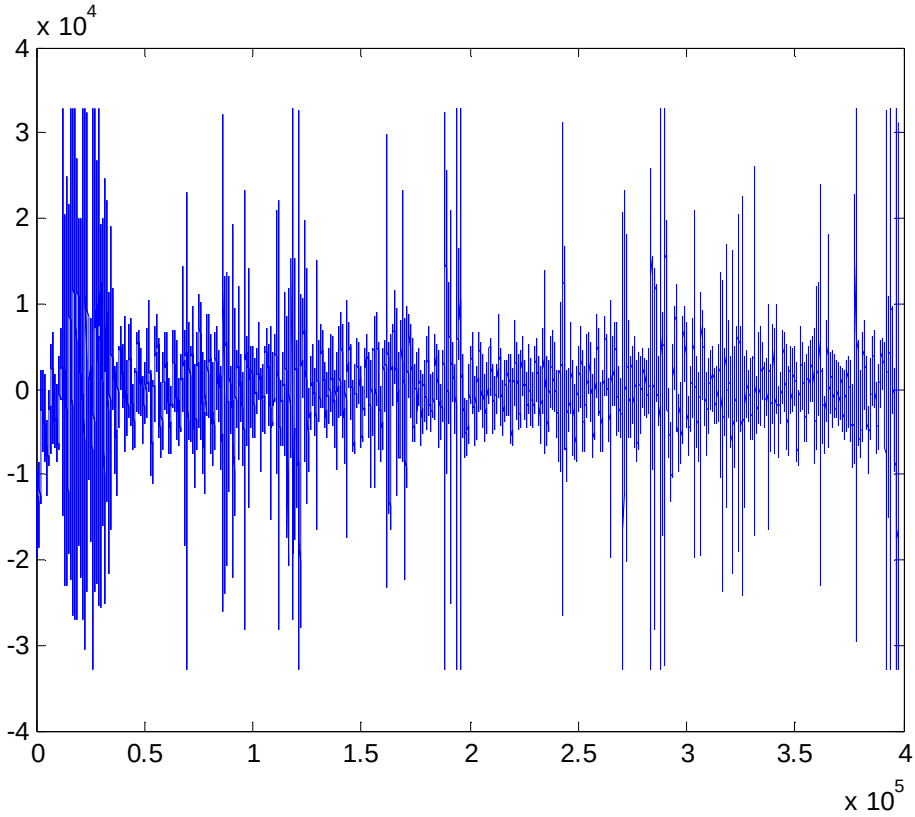


Fig1.1: Input Speech

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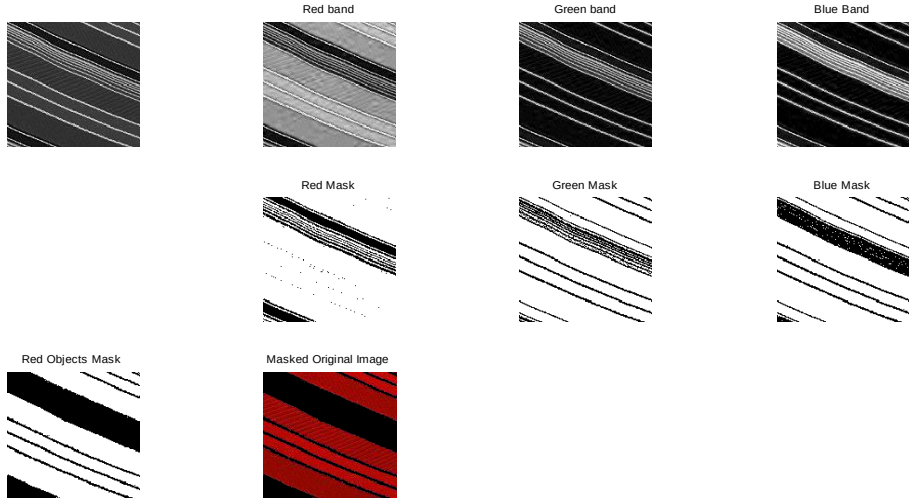


Fig1.2: Color identification

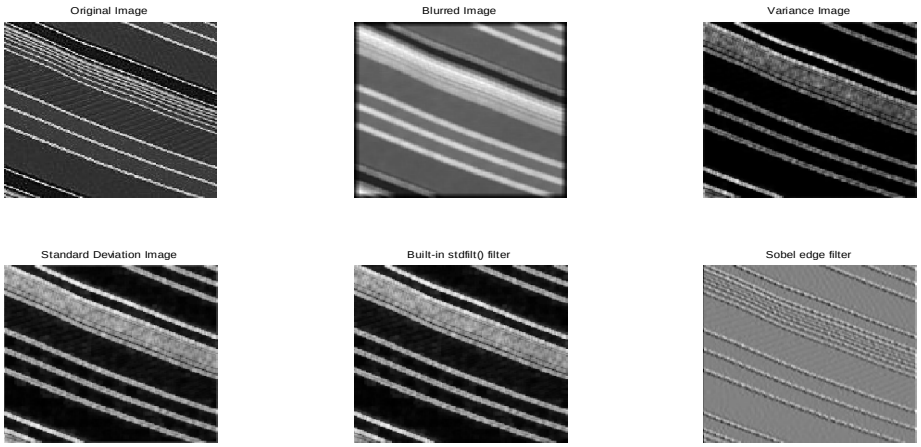


Fig1.3: Edge detection

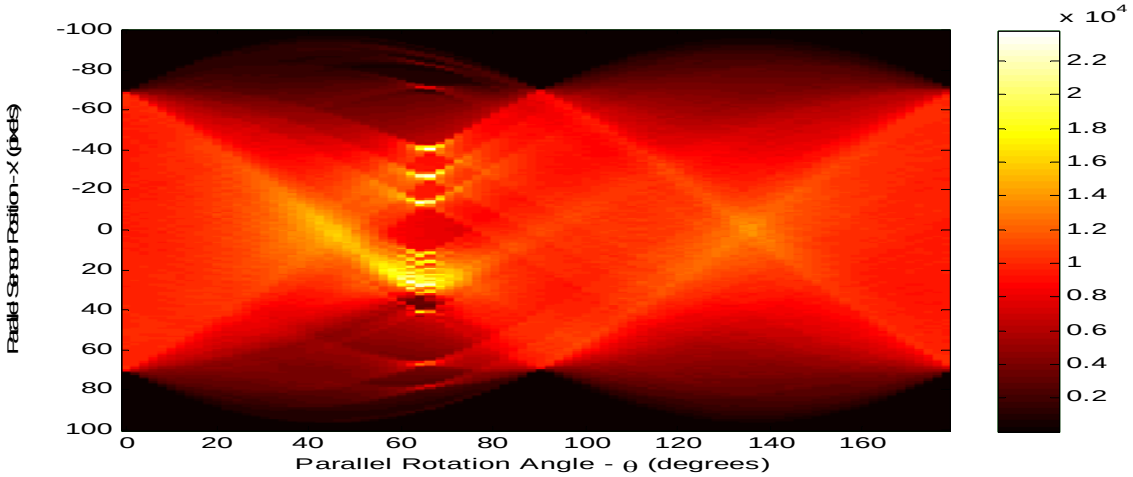


Fig1.4: Radon Transform of the cloth pattern

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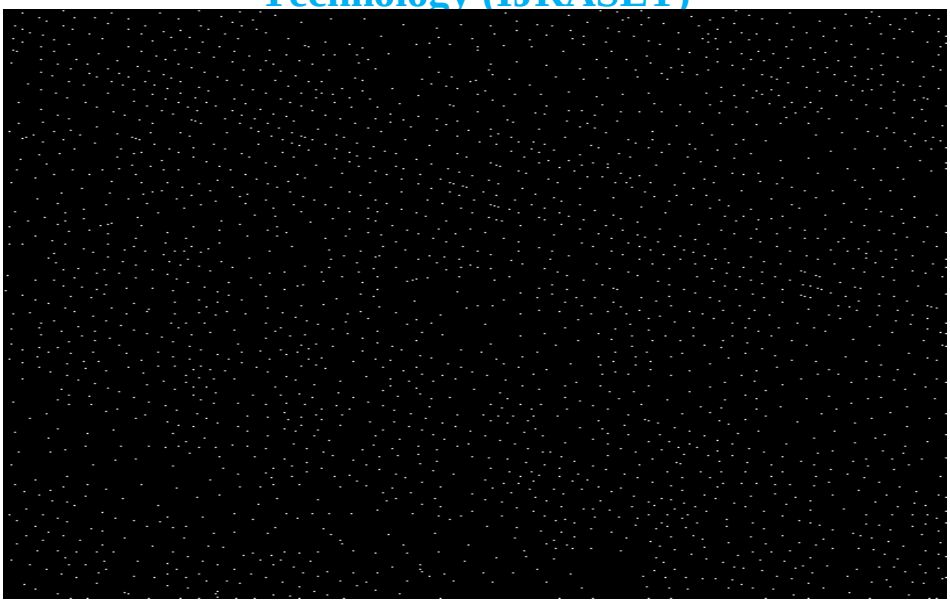


Fig 1.5: Feature Extraction of the cloth pattern

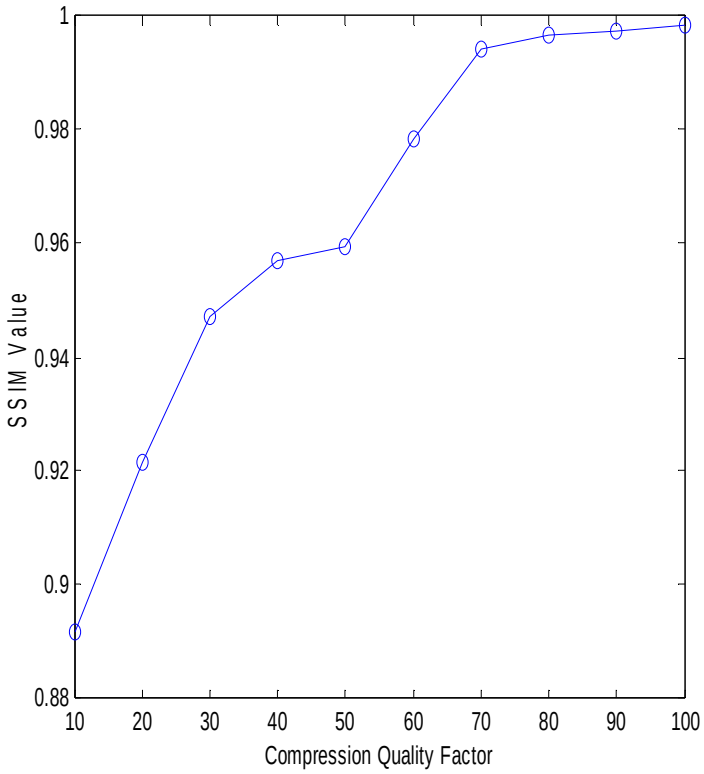


Fig.5: Quality graph of image

V. CONCLUSION

The proposed algorithm recognizes multiple clothing patterns to help visually impaired people in their daily life. The combination of multiple feature channels provides complementary information to improve recognition accuracy. A dataset has been collected for clothing pattern recognition which includes four-pattern categories of plaid, striped, pattern less, and irregular. Furthermore, the performance evaluation on traditional texture datasets validates the generalization of our method to traditional texture analysis and

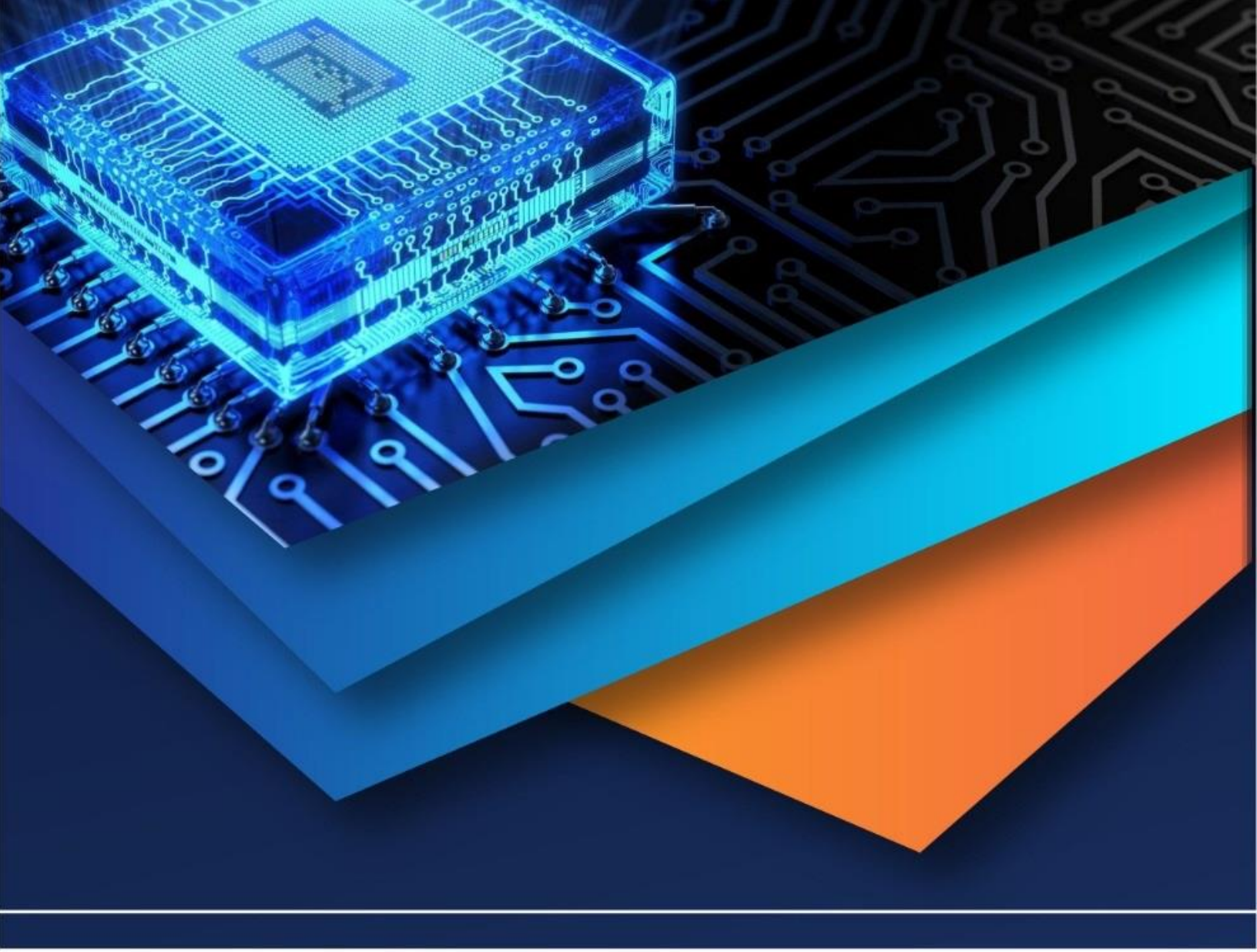
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classification tasks. This paper enriches the study of texture analysis, and leads to improvements over existing methods in handling complex clothing patterns with large interclass variations.

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