



INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume3, Issue4)

Available online at www.ijariit.com

Review on Online Shopping for Visually Impaired People

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Abstract: For Visually impaired people it is difficult to choose different types of clothes during online shopping. We are developing a system which helps blind people to recognize color of clothes along with different categories such as material, size, patterns etc. our system converts speech into text format and then display the result of the different category with speech so that blind people choose the clothes they want. Identification of color is based on a histogram of each image in HSI color space and multilevel clustering is used for identification of items that satisfying many local features. For speech recognition, Deep learning method is used. This approach is helpful for blind people as well as handicapped people.

Keywords: Deep Learning Method, HSI Color Space, Multilevel Clustering.

I. INTRODUCTION

It is difficult for blind people to choose clothes with different colors or they find difficult to online shopping. They take the help from family members or friends to do this, and always depend on other to select something. A system is developed to assist blind people that automatically recognizing clothing patterns and colors. Camera-based clothing pattern recognition is a problem due to many clothing patterns and corresponding large into class variations. Existing texture analysis methods focus on textures with variations in viewpoint and scaling. The level of accuracy in clothing pattern recognition cannot achieve by texture analysis methods. Here, we introduce a system to assist color blind people to select different clothing colors along with different categories. The system contains three major components: 1) database which contains clothing images, a microphone for speech command input 2) speech converter that converts the input speech into text format 3) display of resulting items on the screen of a desktop or wearable computer along with speech.

The system process the voice input, captured voice input is acoustic sound waves that are to be converted into the character string format for semantic interpretation. The result of character string format obtained is then proceed for the global and local feature identification, global feature such as the gender and category, category such as pant, sari, dresses, shirt and so on while the local feature such as red pant then the red is the local feature of the global feature pant. Multilevel clustering is required for identification as it exists local features. The final level of clustered items may lead the actual group of items that the user is searching for. The proper displays of the resulted items are required for easy user interpretation where the descriptions of features that are also given by the user are displayed below each associated image of the item sample.

II. REVIEW OF LITERATURE

A system is being developed for visually impaired people to improve the life quality and safety of such people.

Rubi, Chhavi Rana[1] discussed deep learning algorithms such as Deep Belief Networks Deep Convolutional Network, Restricted Boltzmann Machines, and models such as The multi-model learning that are used in speech recognition and also discussed the software that is required to implement the speech recognition in java language.

Xiaodong Yang [2] proposed a system for blind people through which they independently select clothes based on cloth pattern and colors in a cloth shop. This system consist camera that can handle clothes with fuzzy pattern and recognize clothes into four categories and identify 11 colors: red, orange, yellow, green, cyan, blue, purple, pink, black, gray and white.

FAIZ .M. Hasanuzzaman developed a system to automatically recognize banknote of any currency to assist visually impaired people in [3]. This is also a camera based computer vision technology. This system has features like high accuracy, robustness, high efficiency, ease of use. This system is robust to conditions like occlusion, rotation, scaling, cluttered background, illumination change, wrinkled bills, and also eliminating false recognition and can guide the user to properly and correctly focus on the bill to be recognized using speed up robust features (SURF).

Dimitrios Dakopoulos and Nikolous developed a vision substitution system for travel aid for the blind in [3]. 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.

Yuan et al [4], proposed a system to help the blind people to match clothes from a pair of clothing images. This system can favor a user with the information about identifying the clothing patterns and colors match. But, this system is still not able to automatically identify clothing patterns.

Multifractal spectrum (MFS) proposed by Xu et al [5]. Density functions and orientation templates are used to group the combined fractal dimensions of pixel sets. In order to make representations of texture more strong to 3-D image transformations and changes in the illumination, many of the recent techniques provide information on extracting local image features. Clustering the extracted local features generates the texton dictionary. However; properties of an image in different aspects are captured by multiple features. If different features are highly interrelating, their combination will enhance the feature representation

Lazebnik et [6] introduced a texture representation method depends on affine-invariant descriptors and detectors (RIFT and SPIN). Zhang et al. also linked the scale invariant feature transform (SIFT) and SPIN for texture classification.

An exhaustive comparative study of existing accessible shopping systems for blind and visually impaired people was carried out by Kulyukin and Kutiyawala [3] in 2010. ShopTalk [4] is a wearable solution that requires the user to carry a barcode scanner and a UMPC in a backpack. Verbal route instructions are issued through a headphone connected to the UMPC at the blind person's backpack. Although the supermarket does not need to install and maintain any hardware, the system requires access to the supermarket's inventory control system and binding of product barcodes into supermarket locations so that guiding can be accomplished. The advantage of BlindShopping is that it only demands a lightweight smartphone equipped with a camera to read QR Codes attached to shelf sections and the very blind person's white cane enhanced with an off-the-shelf RFID reader.

The Tinetra [5] project offers the possibility of detecting products via a barcode or RFID reader, and then it obtains related information via GPRS from the server. However, it does not include a guiding system as Blind Shopping. Similarly to us, they use Baracoda's Pencil2 to scan barcodes and IDBlue to scan RFID tags.

III. PROPOSED SYSTEM

Modules:

Signup (For New users)
Login (For Existing Users)
Search Product Using Speech Recognition
Display Product by Product Category
Pay Pricing
Logout

Modules Description:

- i. **Signup (For New Users):** New user can sign up for this part of the project. Here user means a client who enters into the website.
- ii. **Login (For existing Users):** This part of the project is for previous clients of the site. The user who has already registered at here they can log in and view the related things to themselves and they can do the shopping over here.
- iii. **Search product using Speech Recognition:** This is the main section of the product where the user can search their required products using various categories with the help of speech. The system is now ready to take speech input given by the user. The system should be able to recognize and capture this voice input. The voice input signals that are in the form of acoustic waves that are given to the system. These waves undergo conversion into a character string.
- iv. **Display Product by Product Category:** This section of the project will display the related products searched by the user.
- v. **Pay Pricing:** After the purchase of the product the user can pay their related amount of product in this part of the website.
- vi. **Logout:** After purchasing the user can terminate his session with the help of this section.

CONCLUSION

There are many different segments available for online stores, which are affected by constant evolutions. To meet the new challenges and requirements of the market, the business owners need to think and make better decisions. We are developing a system for visually impaired people so that they can do online shopping. The system accepts speech convert it into text format and display the desired result. This will help blind people to lead an independent life. Global, local feature is used for identification and multilevel clustering is used to increase the accuracy of the system. Also, the performance evaluation of the assistive can validate the resulting performance of the system.

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