GESTURE DRAWING ANDROID APPLICATION FOR VISUALLY-IMPAIRED PEOPLE

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Abstract - *Technology as it finds its wide range of application in every field is not an exception even in the field of Mobile Technology. One may think of a technology that reduces the burdens of a blind person by using mobile applications in a similar way that aids the clear-sighted people.*

The Viewable content yields an enjoyable and powerful way for people to communicate, still it also creates challenges for people with low vision or blindness. With only the visual feedback, the user especially a blind person would be unable to recognize the action that takes place following their input. To help solve this issue, this work targets on the likelihood of using added auditory feedback and haptic feedback to aid in drawing of trajectory-based finger gestures.

A mechanism that uses haptic rendering and contact detection is to be implemented in the proposed system. Hence, together with the current algorithm in use, a voice output and limited haptic output is expected to reach a higher drawing recognition accuracy for trajectory-based finger gestures.

Key Words: **haptic, auditory feedback, trajectory-based finger gestures**

1. INTRODUCTION

There are many information access problems experienced by visually impaired people that are now presently being solved with computers. Although computer users generally rely heavily on visual feedback (with the graphical user interface playing an important part in interactions), users with little or no vision must rely on other modalities to access the same information.

Screen readers have proved to be a successful solution for reading out texts in the screen. Dynamic Braille displays perform a similar function for situations where more discreet communication is required. The goal of the work described here is to examine techniques to enable users to be notified of the action that follows their input.

Gesture has the potential to be a useful alternative control mechanism for blind and visually impaired users. A gesture can be performed with any device that allows continuous interaction such as a mouse and can be used to perform a wide range of control actions within an interface.

The user would perform the gesture which the system would recognize, and perform the appropriate actions.

1.1 Objective

• The prime objective of "Gesture Drawing Application for visually-impaired people" is to develop a full-fledged android application which would enable blind people to make calls and send a message of their current location via a touch-screen mobile.

• It is expected to achieve an higher accuracy in drawing trajectory-based finger gestures.

• The application also aims at achieving high-level performance in par with finger-attached pen.

• The audio and haptic feedback as a successful task completion sign is expected to significantly reduce fat-finger issue while drawing gestures.

1.2 Scope

• It possibly has the capacity to solve many problems of voice recognition applications such as inaccuracy, slowness and interpretation of unusual voices.

• In addition, this application has increased the users' ability to dial phone numbers more independently and less stressfully.

• It keeps gestures to a minimum, it does not rely on physical keys, and it takes the technologies of screen readers and haptics one step further.

2. PROBLEM STATEMENT

Accessing and using a smartphone is a different experience with a visual impairment or blindness and the preference of applications may also vary accordingly. This paper presents the development of a new android mobile application which is designed to help blind and visually-impaired people make phone calls and message current location to contacts/family/friends. It is developed to facilitate entering information to touch screen mobile phones by blind people. The application also involves limited haptic feedback and auditory feedback as a form of confirmation to user. This application is advantageous through its innovative concept, its simplicity and ability to use more independently and less stressfully.

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3. EXISTING SYSTEM

The Existing technique of mobile calls require searching the contact list in phone memory. It requires manual search & call. A visually impaired person –will be unable to utilize this facility. A search-based algorithm is not suitable for visually impaired people to make calls. It also does not provide visually impaired people with a global perception of the surrounding environment and nearby events or a way-finding capability.

3.1 Drawbacks

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4. PROPOSED SYSTEM

The proposed system is aimed at integrating rich information through sense of touch and auditory means to add to the information provided by visual means. It primarily uses touch & call - haptic technology where calling is done by drawing patterns or gestures. Once a blind user stores the contact details such as name and number of the contact along with the associated gesture with the help of someone, the user can then independently start using the application to make calls. In case of emergency, if user wants to notify or gain help from friends, he/she can send a message of the current location to saved contact by drawing the gesture. It sends a message with the current location of user in latitude and longitude. When the application is opened, a haptic feedback will be observed giving user the confidence that the right app is opened. The same is also observed when Home button is pressed. An audio output is heard every time a call or message is being performed, thus giving the user a conformance of the action performed. Other functions of the proposed system include the facilities to delete and rename a contact.

4.1 Advantages

• The main goal of our work is integrating rich information through sense of touch and auditory means to add to the information provided by visual means.
• Low time consuming
• Effective for visually-impaired people.
• Does not requires manual searching.

5. TECHNOLOGY

5.1 Haptic Technology

• The algorithm allows visually impaired people to use android mobile for call, where different design pattern applied for each contacts in contact list. This put demands on the haptic algorithm. Not search based algorithm.
• Uses touch and call with haptic feedback for each task ending for notifying the user of successful completion.

6. EXPERIMENTAL DESIGN OF PROPOSED DESIGN
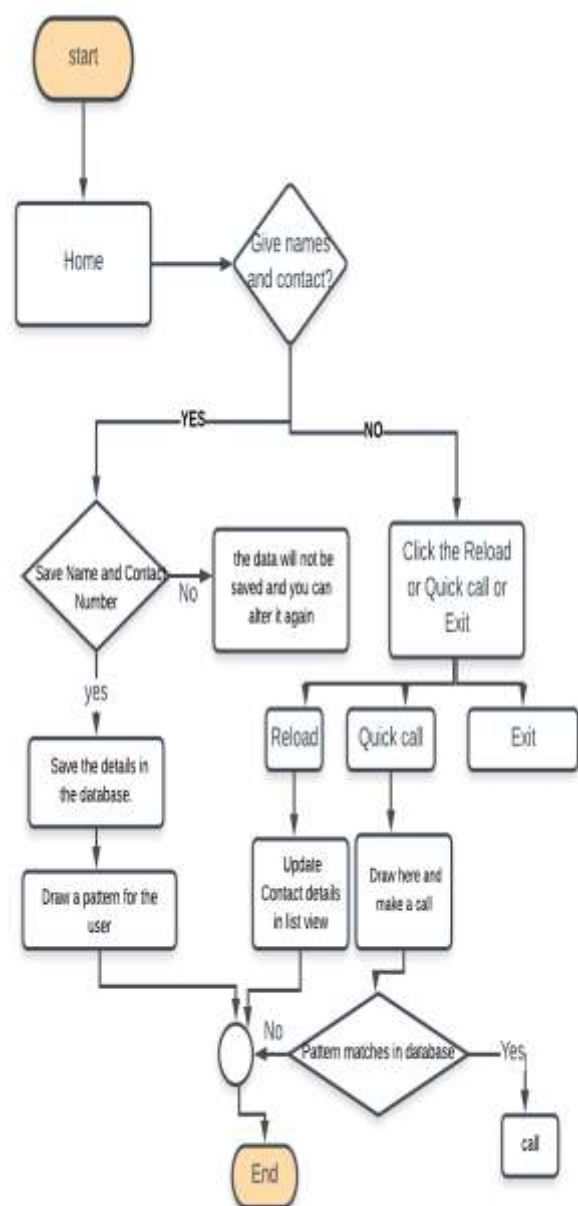
7. CONCLUSION

This form is very efficient and helpful for visually impaired people to make a call. The project primarily focuses on storing the information of the gesture for each individual contact in the database and warning during drawing a wrong gesture or an unknown gesture. The calling is done using haptic touch and call along with an audio output. This algorithm provides an haptic output or a vibration as an output once each step during the call is performed. This helps identify if the right gesture is drawn or not. The database should be updated each time. Using SQL Database, the data can be easily retrieved and displayed.

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