Video notification for SignSupport
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Abstract

SignSupport is a mobile application created to assist the communication between a Deaf and a hearing person; SignSupport is for paternal and predictable communication in various scenarios. The current version of SignSupport focuses on a communication between a pharmacist and a Deaf patient. The pharmacist types in and makes selections on the available buttons to set the notification. The system then matches the selected options with the pre-recorded videos and populates or displays them to the Deaf patient who uses South African Sign Language (SASL). SignSupport works offline because it is stored in the memory SD card of the mobile phone. With this application, Deaf patients can later on review the medication instructions. Just because Deaf patients also forget to take their medication as instructed by the pharmacist like hearing people do. Therefore they need a medication reminder to remind them when it is time to take their medication by following the instructions given by the pharmacist. This paper proposes a medication reminder in the form of which video notification will be added on SignSupport mobile application. The video notification gives a reminder to Deaf patients. A patient can feel the intense vibration when there is a reminder. The video notification shows an image of the medication to be taken on the mobile phone screen; the patient can then click on the image to view its instructions regarding when and how to take the medication. These instructions will be presented by a video in SASL.

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Glossary

Memory SD card	A mall storage medium used to store data such as text, pictures,audio, and v
SASL	South African Sign Language
XML	Extensible Markup Language
Android	It is a mobile operating system

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Chapter 3

Introduction

Deaf people have their own culture and language, not based on spoken language[2]. This language is the South African Sign Language (SASL), which is a combination of hand gestures and facial expression. In order to communicate with the Deaf community, one has to understand their language. There are very few pharmacist that know how to Sign [1], which makes it very difficult for a Deaf patient to grasp the instructions given by the pharmacist regarding how and when to take the medication when the Deaf user visits a public hospital or any medical provider. Most of the Deaf people have weak reading and writing skills[2], which makes it difficult for them to communicate using text messages. This is where a project like SignSupport comes into the spotlight. SignSupport is a mobile application that assists a communication between a Deaf person and a hearing person.
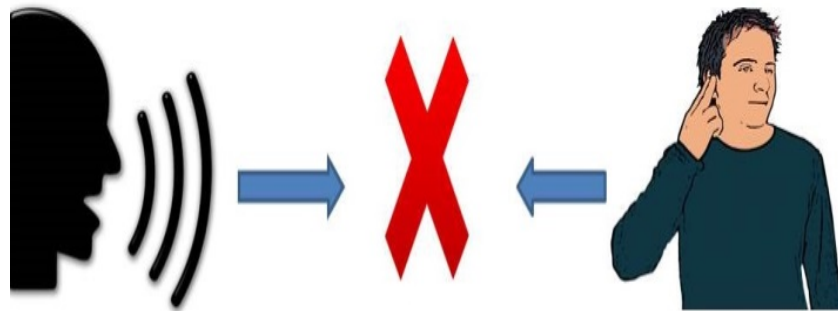
Figure 1: Communication barrier

3.1   Problem

Deaf patients also forget to take their medication as instructed by the pharmacist like hearing people do. Therefore they need a medication reminder to remind them when it is time to take their medication by following the instructions given by the pharmacist. But now the problem is that the existing reminders are audio based, use English text and they require understanding of the mobile phones.

3.2   Possible Solution

The majority of people in South Africa own mobile phones and there are many people own smart phones that allow video play back, thus a video notification reminder is the solution to the problem currently faced by the Deaf. The aim of this project is to help Deaf people in a medication situation; in

particular it will aid the Deaf patient to understand how and when to take the medication. As a solution to the problem, the video notification will be added to the SignSupport mobile application. This video notification will aid as a reminder to the Deaf patient on when and how to take the given medication. A pharmacist will enter medication instructions on the phone, when it is time for the Deaf person to take the medication the phone will vibrate with no sound. Then an image of the medication will be displayed on the screen, when the Deaf patient click or taps on that image, a SASL video will be played which will explain how to take the medication. The user will also be able to replay the pause, playback and fast forward the video.

Figure 2: Solution summary

Chapter 4

User Requirements

4.1 Specifications

- Video notification must work on Android smart phones

- Suggested size of the phone is medium to large

- Phone must have intense vibration

- Phone must be able to view full screen

- The video instructions must be univocal

- Video notification must be network independent

4.2 Expectations of the Software Solution

Since there are two different end users of the proposed application, the following words indicate who is going to use that certain part of the application and the word in brackets indicates where expectation refers to.
Deaf – The Deaf patient
Pharm – The pharmacist
Both – Both, the pharmacist and the Deaf user

- The software should be able to interrupt whatever the user is busy with (Deaf)

- The software should have a nice and clear instructions for input (Pharm)

- User should be able to insert new instructions without disturbing the existing instructions (Pharm)

- User should be able to cancel or delete the instructions in case of mistakes made (Pharm)

- User should be able to take a picture of the medication using a camera (Pharm)

- Medication pictures should be able stored in the memory SD card (Both)

- User's phone must vibrate when it is time to take medication (Deaf)

- Picture of the medication must be displayed on the screen when the phone vibrates (Deaf)

- User should be able to display a SASL video or show instructions in SASL by clicking on the picture (Deaf)

- User should be able to playback, pause and fast forward the video instructions (Deaf)

- The software should be able to handle multiple notifications

Chapter 5

Requirements Analysis

5.1 High level design of the solution

The Deaf patients will interact with the video notification system by using a mobile application that will be pre-installed as an add-on within the SignSupport mobile application. The SASL video will have an image of the medication that will act as a play button when the video pops up. As soon as the user clicks on the image a video that is stored in the memory SD card and corresponds with that image will be retrieved and played. The Deaf patient then has to watch the instructions given in the SASL video. The notification will be set by a pharmacist every time the Deaf patient visits a public hospital or any medical provider.

Figure 3: Example of a memory SD card

5.2   Deep Analysis of the solution

The video notification will be implemented on an Android mobile phone as an add-on feature for the SignSupport mobile application. The phone has to have a big screen resolution with big clear icons, the capability to playback pause and fast forward videos with no internet access required. The phone has to have a 2 megapixels camera to take clear pictures of the medication. The user needs have a memory SD card of at least 512 Megabytes which will be used to store the different video with their images. When it is time to take the medication an image of the medication will appear on the screen of the phone, if the user clicks on the image, a SASL video will play full screen on the phone and the user will have the options of pressing the pause button, playback button or fast forward button. When the user clicks on the image, the video will start showing the user what to do. The SASL video with instructions will be pre-installed in the memory SD card. The pharmacist will designate the time, date and the other details from a screen that is designed specifically for the pharmacist. Once the video is ready to play, the Deaf user will be asked to enter input by pressing on the image that appears on the screen. After the video has completed playing, there will be three buttons available, a button to replay the video, pause and fast forward the video. The technologies that will be used are Eclipse, a memory SD card, Desktop computer and an Android smart phone. In building the application, Eclipsed will used for creating the application because Eclipse uses both Java and XML for the interface.

5.3   Related work

There are many other notification solutions that can act as a reminder; however the problem with these solutions is that most mobile phone manufactures produce audio based notifications and these solutions cater for literate people with basic mobile phone experience. The Deaf and the functionally illiterate people are not catered at all with these existing solution systems. MediSafe is an attractive, visual well designed app. Its interface is attractive and has an easy-to-use pill reminder [3]. MediSafe is a medication management application that is very close to SignSupport but it is built for hearing and literate people [3]. MediSafe also allows the user help family members with their medication. Another problem with the existing mobile notifications is

the fact that the notification must be set by the users themselves, that means the users have to remember all the instructions given by the pharmacist and also remember to set the notifications.

Chapter 6

Project Plan

Terms	Tasks
TERM 1 (Plan)	• Background reading about SignSupport • Read previous video notification project documentations • Video notification project proposal • Gather Video notification user requirements • Analyse the user requirements for the video notification
TERM 2 (Model)	• Create a use-case diagram • Create a story board • Design the video notification application (prototype) • Verify the design against the user requirements • Produce a pseudo code for the design • Write a report and prepare a presentation
TERM 3 (Construct)	• Start and finish implementing the prototype • Merge the video notification with the SignSupport application • Observe its efficiency when in use • Write a report and prepare a presentation of all steps taken and outcome observed
TERM 4 (Test)	• Analyse feedback from the previous stage's results • Modify the video notification to make it more efficient • Write documentation and a presentation of the final version of the video notification

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