ADDING A VIDEO NOTIFICATION TO SIGNSUPPORT

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Abstract

The computer scientists and computer engineers know how to construct user interfaces that can accomodate users who are functionally illiterate particularly on mobile devices. This projects aims to provide support to Deaf patients in terms of medication, in particular to understand when and how to use their medication. Deaf patients often struggle to grasp all the instructions given by a pharmacist to them pertaining how to use their medicine. For the purpose of this project, a video notification will be added to the already existing SignSupport mobile application, to notify Deaf patients when and how to take their medication. The application will translate the given instructions in English text to a pre-recorded Sign Language video, which will be displayed on the Deaf patient's mobile phone.

List of Figures

List of Tables

Contents

Chapter1

1 The User Requirements Document

1.1 Introduction

The User Requirements Document(URD) simply describes the problem in from the user's perspective. The URD gives a simple description of the problem. The user should explicate what the software needs to do. The most important part of this document is to designate what the user requires from the application or program. Basically the URD is a blueprint for a programmer to know exactly what the user wants. The aim of this project is to add a video notification to SignSupport[1], an application to help Deaf[2] [9] patients to better understand the instructions of a pharmacist. There are around 600,000 Deaf people in South Africa [4].

1.2 User's view of the problem

In this section people who are not auditorily impaired will be interviewed predicated on how they would react to persuavive technologies and how they remind themselves of paramount tasks and daily activities. A list of questions will be compiled and the users will be asked general questions

[1]is a mobile application that helps build communication between a Deaf person and a pharmacist when a Deaf person visits a pharmacy

[2]Deaf with a capital 'D' indicates the cultural identity of a deaf person who uses a signed language, e.g. SASL, as a primary language of communication

about their mobile phone usage. Furthermore, articles on Persuavive technologies[3] [7] will be reviewed to accumulate more information on how people react to it.

1.3 Brief description of the problem domain

Deaf and functionally illiterate [4] people could benefit from a mobile phone application, that reminds them when it is time to take their medication(s) and what the prescribed dosage(s) for each pill or syrup is. This project's aim is to help the Deaf to be compliant and to take their medication correctly and at the right time. The video notification reminder is designed specifically for Deaf.

1.4 Complete description of the problem

Deaf people find it arduous to communicate with auricula people since majority use Sign Language (SASL)[5], to communicate. Most Deaf people are functionally illiterate and they communicate using SASL only : reading , writing and lip-reading are not an alternative. Dactylology interpreters are very expensive because registered dactylology interpreters are not easily

[3]Persuasive technology - is broadly defined as technology that is designed to change attitudes or behaviors of the users through persuasion and social influence, but not through coercion.

[4]Functional illiteracy is contrasted with illiteracy in the strict sense, meaning the inability to read or write simple sentences in any language

[5]South African Sign Language

avalaible. Deaf patients are in need of a video reminder to work specifically for them in a language they understand (SASL), reminding them when it is time for the consumption of their medication and to follow instructions given by the pharmacists. The majority of people in South Africa own mobile phones and many have smart phones that allow video play back, thus a video notification reminder is the solution to the problem currently faced by the Deaf and if the system is habituated, could also benefit illiterate patients.

1.5 What is expected from the software solution

The software must be able to interrupt whatever the patient is busy with, and seek their attention. It must show a video image with clear and facile instructions. The software solution must also be intuitive and the instructions must be unequivocal. It must be user friendly for the users who are functionally illiterate. The solution is expected to be able to remind patients when it is time for their medication and how to consume medication(s). This application is expected to work on Android smart mobile phones. It can also be developed to work on other platforms such as iOS and Windows (but it is not within the scope of this project).

1.6 What is not expected from the software solution

The system should be simple because it will be catering for the functionally illiterate users, should not require intricate hardware and should not be audio based in any way, and should have unambiguous icons. The application should be network independent, meaning it must work on every cellphone network.

1.7 Chapter Summary

This chapter fixates on viewing of the problem from the user's perspective. The solution is based on the paramount information gained from the users. In the next chapter the focus will be on the programmer's point of view of the problem, and how, with what technologies the programmer envisages to solve the problem.

Chapter2

2 Requirement Analysis Document

2.1 Introduction

In this section the problem is considered from the designer's perspective. However , instead of going straight into the implementation details, the analysis fixates on the system and the sofware requirements needed to implement the user requirements. This section does not delve into programming details, instead it takes the user requirements and lucidly identifies all the factors that will affect the solution that the user wants. The analysis may also show preference for a programmer to use a particular programming language that best suits the problem domain. The Requirements Analysis Document(RAD) compares with the User Requirements Document(URD) as defining the entire system , and then breaks the URD down into Work Breakdown Structures(WBS)[6]. These structures identify the subsystems of the overall solution, and the relationships between them. The RAD also goes further and identifies the authetic details of the problem that the user may not be cognizant of.

[6]manageable small chunks in a project

2.2 Designer's view of the problem

Deaf patients need an application on their mobile phones that will notify them when it is time to take their medication. The application should exhibit a sign language video, the different medication that the patient needs to take. By using everyday technologies people already have, SignSupport mobile technology makes it easier for families and friends to give the support needed to help their loved ones get healthier together [1]. We know that medication adherence is a critical factor to the success of treatments and medications. We also know the impact of non-adherence which reaches far beyond the health of patients.

2.3 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 SignSupport . The video will have a play button that the patient will utilize to pause and playback. The Deaf patient will press the play button that emerges when the video notification pops up; as soon as the button is pressed a video stored in the memory SD card will play. The Deaf patient then has to watch the instructions given in the video notification. The notification will be set by the pharmacist everytime the patient visits a public hospital.

Figure 1: Samsung smartphone [6]

Figure 2: Example of an SD memory card [3]

2.4 Deep analysis of these parts and detailing

The application will be implemented on an Android mobile phone as an add on feature for the SignSupport application. The phone has to have a big screen resolution, the capability to playback videos and no internet access required. The mobile phone's resolution will assist in clear viewing of the video. The user needs to have a memory SD card which will be used to store the different videos. When it is time for the medicine intake a video notification will appear on the phone, if the user presses the play button, a

video will play full screen on the phone and the user will have the option of pressing the play button or ceasing it by pressing the back button. Once the play button has been pressed , the video starts showing the user what to do.

Sign language videos with instructions will be preinstalled 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 user will be asked to enter input in the form of pressing the play button or stop it by pressing the back button. The play button will allow for the video to start playing and the phone's back button will stop the video and allow for the user to resume with whatever they were busy with. The technologies that will be used are Eclipse , a memory SD card , Desktop computer. In building the application Eclipse will be used for creating the application as it uses both Java and XML.

2.5 Identifying existing solutions

Current mobile notifications are a solution , however the problem with these solutions is that most mobile phone manufacturers produce audio based notifications and these also cater only for the literate people with some basic mobile phone exeperience. The Deaf and the functionally illiterate are not considered at all with the existing notification systems. There is an existing Android application MediSafe Meds and Pill Reminder that does almost similar functions to SignSupport but it is more focused on

hearing people. MediSafe is an attractive, visual well designed app - its interface is attractive and easy-to-use pill reminder and medication management app [8]. It will help the user to take his/her medicine on time and safely. It also allows you to help family members with their pills. Another problem with the existing mobile notifications is the fact that the notification must be set up by the users themselves , that means the users have to remember all the instructions given by the pharmacist and also remember to set the notification.

2.6 Identifying alternative technical solutions

The current solutions (e.g. MediSafe application) work well for users who are literate, alternative technical solution would have to be considered and should involve the Deaf users and as well as illiterate users during the design phase. Audio and text can be used for interface. Colour would have to be used extensively as studies show that illiterate people recognize colour and visuals [2]. The professionals that provide signage and communication solutions are being challenged more than ever before to communicate the right information to the right audience at the right point in time.

2.7 Best solution

The proposed solution will be similar to the existing solutions however it is incoporated into the application SignSupport. SignSupport is an

application that acts as a tool to bridge the communication gap often experienced by Deaf patients when visiting a pharmacy [5]. The application sanctions the pharmacist to set the notification time and date, denoting better instructions and the chances of mistakes transpiring in the setting up stages are eschewed. The appplication requires only one action from the patient that is to press the play button. Once the notification is set by the pharmacist the notification pops up on the Deaf patient's mobile phone screen allowing them to go over the instructions again.

2.8 Testing Methods

Testing methods will vary according to the project plan. The first week of the fourth term is mainly for usability testing.Usability testing is a technique used in user-centered interaction design to evaluate a product by testing it on users. This can be seen as an irreplaceable usability practice, since it gives direct input on how real users use the system. This is in contrast with usability inspection methods where experts use different methods to evaluate a user interface without involving users [10]. Perfomance testing would then follow the usability testing, testing the general performance of the application in terms of responsiveness and stability under a particular workload.

2.9 Summary

In this chapter the requisites were analysed from the designer's perspective. The current solution pertinent to the problem was analysed and alternative solutions were considered. The solution was then reduced down to minute parts and test methods were suggested. In the next chapter the user interface is discussed, analysed and investigated.

Table 1: Project plan

	Milestones / Deliverables
Term 1(URD & RAD)	• Do literature review • Start User Requirements Document • Start Requirements Analysis Document • Create a website • Finish URD and RAD • Submit documentation • Prepare mock presentation
Term 2	• Prepare Term 1's presentation
Term 3	
Term 4	

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