

Interactive Wallet for Visually Impaired People

Myvili Jeyaraj

139192L

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Declaration

We declare that this thesis is our own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Name of Student (s)

.....
Signature of Student (s)

Date:

Supervised by

.....
Name of Supervisor(s)

.....
Signature of Supervisor(s)

Date:

Dedication

As we all know, every challenging work needs the love, support and guidance of our elders who have really sacrifices a lot for our growth, and development. I therefore dedicate this dissertation to my loving

Mother

Whose affection encouragement, support and dedication with love towards my work made me able to complete this research successfully; I also acknowledge the dedication & hard work of

My Lecturers

Thank you all for your prayers and support

Abstract

There are more than 39 million people in the world who are blind. In the majority of cases blindness is caused by conditions that are preventable. Many of the people sufferers live in remote areas with little or no access to services and treatment. Asian countries such as Sri Lanka are increasingly implementing the latest technology and developing challenging projects especially for differently abled people.

Now-a-days there are millions of people who have mobile devices with the latest applications installed on it, which are helping them with day to day life.

But compared with developed countries, there are fewer applications for differently abled people in developing countries; particularly because of a lack of technology and the resources available for differently abled people.

Social media is going from a “nice to have” to an essential part of every body’s life. The aim of the project is to give the experience which others having also to the differently abled people. This application has integration of the social media.

New technologies such as Augmented Reality, Near Field Communication (NFC), and voice recognition, are used to develop effective and efficient applications. In 2003 NFC introduced smart cards that are capable of storing data securely and designed to perform more secure, offline transactions without any requirement to contact a backend server. These are becoming more popular in Sri Lanka as well as in other countries. Augmented Reality can be used, so that a Visually Impaired Person can obtain more information from a person standing in front of him or her using a phone.

Voice to Text (**Speech recognition**) is also applied in this app, because the main difficulty for the visually impaired person is ‘reading a text’ or on-screen instructions. SMS and various instructions can be reading using this technology for the visually impaired person. Barcode readers can also play a major role in item recognition and Google APIs, (Add geotags in Picasa, Google, 2014) Facebook SDKs, and Braintree SDKs and APIs also have major impact in the app development.

This combination of various technologies mentioned above is used to create an attractive solution. Features which are not implemented are also mentioned. Sequences diagram and Data Flow Diagrams helped to implement the software.

Admin portal of the application implemented as website and could be able to access by authorised person. It helps to add items for recognition, and returns required details. This helps to show this prototype level applications works. Some part of the admin panel indicates the real time data from the shop/retailers sites.

According to the observation and study more than half of the Visually Impaired Seniors also has a Hearing Impairment. This application is having a unique feature which will help to read SMS/news using Morse code technology. This integration will take the big part in future development. Voice to Text, Text to Voice feature takes the big part of this application, but morse code will replace this and will be useful for the visually impaired people with hearing aid problem.

Combination of different technologies with appropriate integration will help to create the successful application. This application also has the much different integration, such as GPS, NFC, Morse code, Speech recognition, etc.

The mobile solution has been tested by 20 selected users with visual impaired. They were each given a mobile phone with enabled required features. This application indicates how clients satisfy with the features and how it will help in their day to day activities is done using evaluation. Participants were asked to complete questionnaire a take part in formal interviews to indicate how satisfies they were with features and how helpful the application was. The results show that the solution produces a 60% accuracy rate, with many features showing in prototype level.

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Table of Contents

Abstract	iii
Acknowledgements	vi
List of Figures	xi
List of Tables	xi
List of Abbreviations	xii
1. Introduction	1
1.1 Background of the Project	1
1.2 Problem	1
1.3 Aim and Objectives	2
1.4 Scope	3
1.5 Novelty of Research Application	4
1.6 Report Overview	5
Background	5
Analysis	5
Implementation	5
Evaluation	5
2. Background: Literature Review	6
2.1 Smart phone users	7
2.2 Record of Visually Impaired People around World	7
2.3 Visually Impaired people and important of the technology in their life ..	8
2.3.1 Continuing a commitment to digital excellence	9
2.4 Technologies Available for Mobile Development and its comparisons	9
2.4.1 Near Field Communication	9
2.5 Augmented Reality (AR)	18
2.6 Comparison between iOS and Android	20
2.7 ScanLife Barcode and QR Reader	21

2.8	Review of Others Work	21
2.8.1	Android and iOS apps	21
i)	ViaOpta Navigation	22
ii)	ViaOpta Daily	22
3.	Technology adapted	23
3.1	Augmented Reality	23
3.2	Voice to Text	24
3.3	NFC	24
4.	Approach	25
4.1	The SDKs and Libraries have been used for the application.	25
4.2	How libraries and SDK have been used in the app.	25
4.2.1	Facebook Integration	25
4.2.2	Braintree Integrations	26
4.2.3	Barcode reading	26
4.2.4	NFC	26
4.2.5	Voice to Text technology	26
5.	Analysis	27
5.1	Overview	27
5.1.1	iOS and Android applications	27
5.1.2	Features analysis	27
5.1.3	NFC Tag	28
5.2	Security and capacity features	29
5.3	ZBar - Bar Code & QR-Code scanner	29
5.4	Why the development of this application in android is better than?	29
5.5	Review & Analysing others work	30
5.5.1	ScanLife Barcode and QR Reader	30
5.5.2	TalkBack	30
5.5.3	IDEAL Accessibility Installer	31
5.5.4	ACB Link	31
6.	Design	32

6.1	Overall Architecture of each component	32
6.1.1	Braintree integration	32
6.1.2	Context Level Diagram	32
6.1.3	Main Server	33
	LAMP Bundle & APIs	33
6.2	Text to Voice	33
6.3	Voice to Text	34
6.4	Item recognition	34
6.5	Payment Integration	34
6.6	UML Diagrams and High Level Diagrams for some functions	35
6.6.1	Scanning an Item – Activity Diagram	35
6.6.2	Online payment	35
6.6.3	NFC Checking balance of the Card – Sequence Diagram	37
6.6.4	PayPal – Sequence Diagram	37
6.6.5	Facebook Integrtion – Login – Sequence diagram	38
7.	Implementation	39
7.1	Menu selection	39
7.2	Implementation of item recognition	40
7.3	Read/Write NFC	40
7.4	Augmented Reality – Item Detection	40
7.5	Speaker Class	41
7.6	Facebook Integration	41
7.7	Read received SMS	42
7.8	Payment using NFC (Source 1.8)	42
7.9	Morse Code	42
8.	Evaluation	43
8.1	Methodology	43
8.2	Android, iOS and other technologies	44
8.3	Read SMS	46

8.4	NFC Architecture	46
8.5	Card Read/Write Algorithm	48
8.5.1	How it works	48
8.6	ZBar - Bar Code & QR-Code scanner	48
8.7	Social media integration	48
9.	Conclusion and Future developments	49
10.	Bibliography	51
	Appendix A - Quality Assurance (Test Cases).....	55
	Test Case for Item Recognition & web URL (QR Code).....	55
	Test Case for location tracking	55
	Test Case for Facebook integration	55
	Test Case for Web Portal and Braintree Payment	56
	Test Case for Item detection - augmented	56
	Appendix B - Questionnaire Used For User Evaluation.....	57
	Appendix C - Class diagrams	59
	Appendix D - Crucial part in implementation..	61
	Appendix E - Significance of the coding	65
	Appendix F - Evaluation results	68

List of Figures

figure 2-1: Smart Card Distribution In World Taken From [12]	13
Table 2.5: Advantages And Disadvantages Of Existing Solutions	14
Figure 5-2: Barcode Reader Application	30
Figure 5-3: Barcode Reader Application	31
Figure 6-1: Identify Item Using Nfc	32
Figure 6-3: Data Flow Diagram For Sales.....	33
Figure 6-4: Identify Item Using Nfc	35
Figure 6-5: Sales Process When Using Nfc Card And Other Technology– High Level Diagram	35
Figure 6-6: Payment - Online	36
Figure 6-7: Use Case Diagram For Credit Card Payment	36
Figure 6-8: Nfc Checking Balance Of The Card – Sequence Diagram.....	37
Figure 6-9: Paypal – Sequence Diagram	38
Figure 6-10: Paypal – Sequence Diagram	38
Figure 7-1: Facebook User Roles	41
Figure 7-2: Facebook Settings Page For Application Id	41
Figure 9-1: Overall Architecture	46
Figure 9-2: Client Architecture	47

List of Tables

figure 2-0: Smart Phone Users	7
Table 2.1: Evaluation On Research Work Against [6]	11
Table 2.2: Google Wallet Evaluation	12
Table 2.3: Nfc Type Comparison Table	12
Table 2.4: Mifare And Sony Felica Feature Comparison	13
Table 2.6: Comparison Of Security Attempts	15
Table 2.7: Evaluation Of Tourist Applications Made Easier Using Nfc	16
Table 2.8: Comparison Of Sdks From	19
Table 2.9: Comparison Of Ios/Android	20
Table 5.1: Feature Comparison With The Prospected Tool	28
Table 8.1: Wallet Application Evaluation	43
Table 8.2: Weighted Value Table For Other Users	44
Table A.1: Test Case For Travel Card Windows Application	55
Table A.2: Test Case For Travel Card Mobile Application	55
Table A.3: Test Case For Tourist Ticket Book Application	56
Table A.4: Test Case For Web Portal	56

List of Abbreviations

API	-Application Programming Interface
AR	-Augmented Reality
NFC	-Near Field Communication
RFID	-Radio Frequency Identification
VIP	-Visually Impaired People
AT	-Assistive Technology