

Sappu Savari - Location Based Advertising & Marketing System

I S Dewasurendra

139160M

Faculty of Information Technology

University of Moratuwa

2015

Sappu Savari - Location Based Advertising & Marketing System

I S Dewasurendra

139160M

Dissertation submitted to the Faculty of Information Technology, University of Moratuwa, Sri Lanka for the partial fulfillment of the requirements of the Master of Science/ Post Graduate Diploma in Information Technology.

March 2016

Declaration

I declare that this dissertation on my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education to the best of my knowledge and belief. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given I also hereby give consent for my dissertation. If accepted, to be made available for photocopying ad for interlibrary loans, and for the title and summary to be made available to outside organizations.

I S Dewasurendra

.....
Signature

Date:

Supervised by,

Mr Saminda Premaratne

.....
Signature

Date:

Acknowledgments

First, I express my heartfelt appreciation and gratitude to my supervisor, Mr Saminda Premaratne for his most valued guidance and commitment to make this project successful.

Also sincere appreciation is extended to Dean of the faculty of Information Technology of University of Moratuwa, Dr. Lochandraka Ranathunga.

My sincere thanks also goes to my parents, my wife Chamilka and her parents for their continuous support, encouragement and cooperation extended to me to make my effort's success.

Last but not least my office colleagues Hasara, Nadeeshani, Thilina, Thejavi and Danushka who helped me in difficult time by providing continuous support and encouragement to successfully complete this project.

Finally, I thank all who helped me.

Abstract

There are many different advertising media, all of which serve different purposes. Advertising helps buyers to find sellers and sellers to sell their goods and services for buyers. In early stages, people used to use print media such as newspapers, flyers and notices to buy and sell industry. But later with the tremendous success of the internet, evolution of advertising begins. The World Wide Web, mobile communication and different kinds of software has introduced to the market. At present these electronic advertising methods are more popular and built a huge audience through the internet. Later World Wide Web integrated with mobile communication and became the main advertising media to buy and sell.

When the systems get expanded the number of posts of advertisements will increase at higher rates. Users have to spend several hours searching for exact goods and services through the internet. Therefore systems integrated with some advanced search functionalities to help find the best match, but still users have to keep searching as new advertisements are popping up in every second.

‘Sappu Savari’ is the new proposed system which is more helpful and interactive to the users. People can easily use this new system not only in desktops and laptops but also in their devices like mobile phones, tablets. The main purpose of the mobile related technology is to satisfy user needs to access information and services, including Location Based Services (LBS) anywhere anytime. The system will keep searching automatically, match with the given details and notify the best match for the users. The user doesn’t need to go through the available lengthy list of advertisements and find the best matching goods and services. While user (buyer/seller) uses the system, it will always track the location of the user and notify nearby goods and services with relevant buying and selling details. This will make easy for users to contact the other party and could be able to get the exact services or goods' location using the generated map route.

This concept will help users to avoid unnecessary time waste. The system will be able to track down all the advertisements according to the given required details and provide a reliable and interactive way of tracking the locations according to the advertisements. The system will be read locations by the available sensors of the devices which have been used by the user. Nearby locations will be notified to the users and give alerts with summarized details. This will allow users to find and meet buyers or sellers on their way.

The system will be automated to search advertisements and tracking the locations according to the available details.

The technologies adopted for this design are based on open standards and designed aiming to successfully meet the requirements of the user needs.

Table of Contents

Chapter 1	1
Sappu Savari - The Next Level of Mobile Marketing.....	1
1.1 Introduction	1
1.2 Background.....	2
1.3 Aim and Objective.....	4
1.4 Proposed System.....	5
1.5 Summary.....	8
Chapter 2	9
Existing Issues in Internet Based Advertising Systems	9
2.1 Introduction	9
2.2 Existing Location Based Systems.....	9
2.3 Summary.....	16
Chapter 3	21
Beyond Internet Advertising and Marketing	21
3.1 Introduction	21
3.2 Mobile Communication – Beyond Internet Marketing	21
3.3 Summary.....	24
Chapter 4	25
Sappu Savari – The Revolutionary Concept of Advertising.....	25
4.1 Introduction	25
4.2 Approach	25
4.3 Summary	28
Chapter 5	29

Sappu Savari – The New Mobile Oriented Architecture	29
5.1 Introduction	29
5.2 Analysis and Design.....	29
5.2.1 Scope	29
5.2.2 Design Considerations	30
5.2.3 Detailed Software Architecture and Technology Stack	32
5.2.4 Detailed Component Design.....	34
5.2.5 Detailed Program Sequence.....	34
5.2.6 Detailed Program Specification.....	35
5.2.7 Deployment View.....	36
5.2.8 Implementation Model	36
5.3 Summary	37
Chapter 6.....	38
Sappu Savari – Implementation	38
6.1 Introduction	38
6.2 Implementation of the Sappu Savari	38
6.2.1 User Authentication.....	38
6.2.2 Detect User Location	39
6.2.3 Add Product Items	40
6.2.4 Search Products	41
6.2.5 Suggestions	42
6.2.6 Notifications	42
6.2.7 Messaging Platform.....	44
6.2.8 Product Rating	44
6.2.9 Comments.....	45

6.2.10 Other	45
6.3 Summary	46
Chapter 7	47
Evaluation of the System	47
7.1 Introduction	47
7.2 Evaluation and Testing of the Project	47
7.3 Evaluation of Sappu Savari	48
Chapter 8	54
Discussion	54
7.1 Introduction	54
7.2 Whether the project goal achieved?	54
7.3 Problem encountered and limitation	55
7.4 Future Work	55
7.3 Summary	57
Chapter 8	58
References	58
Chapter 9	60
Appendix	60
9.1 Appendix A – Sequence Diagrams	60
9.1.1 Login User	60
9.1.2 Post Advertisement	60
9.1.3 Search Advertisement	61
9.1.4 Rank Advertisement	61
9.1.5 Comment on Advertisement	62
9.1.6 Mark Favorite Advertisement	62

9.1.7 Send Messages.....	63
9.2 Appendix B – Class Diagram.....	64
9.3 Appendix C – ER Diagram	65
9.4 Appendix D – Screen Shots	66
9.4.1 Computer Screen Shots	66
9.4.2 Mobile Screen Shots	72
9.5 Appendix E – Source Code	75
9.5.1 Back End Java Code	75
9.5.1.1 Product Domain.....	75
9.5.1.2 Product Category Domain	75
9.5.1.3 Product Sub Category Domain	76
9.5.1.4 Product Multimedia Domain	76
9.5.1.5 Product Search Request Domain	76
9.5.1.6 Notification Domain	77
9.5.1.7 Rating Domain.....	77
9.5.1.8 Message Domain	77
9.5.1.9 Comment Domain.....	78
9.5.1.10 User Domain.....	78
9.5.1.11 User Role Domain	78
9.5.1.12 Product Service.....	79
9.5.1.13 Product Service Implementation	79
9.5.1.14 Product Category Service	81
9.5.1.15 Product Category Service Implementation.....	81
9.5.1.16 Product Multimedia Service	81
9.5.1.17 Product Multimedia Service Implementation.....	82

9.5.1.18 Location Service	82
9.5.1.19 Location Service Implementation.....	82
9.5.1.20 Search Request Service	83
9.5.1.21 Search Request Service Implementation	83
9.5.1.22 Rating Service.....	84
9.5.1.23 Rating Service Implementation	84
9.5.1.24 Comment Service	85
9.5.1.25 Comment Service Implementation	85
9.5.1.26 Message Service	86
9.5.1.27 Message Service Implementation	86
9.5.1.28 User Service.....	86
9.5.1.29 User Service Implementation	87
9.5.1.30 Scheduler Service Implementation	87
9.5.1.31 Product Data Access Service	89
9.5.1.32 Product Category Data Access Service	90
9.5.1.33 Product Sub Category Data Access Service	90
9.5.1.34 Product Multimedia Data Access Service	91
9.5.1.35 Search Request Data Access Service.....	91
9.5.1.36 Rating Data Access Service.....	91
9.5.1.37 Comment Data Access Service.....	91
9.5.1.38 Message Data Access Service	91
9.5.1.39 User Data Access Service.....	92
9.5.1.40 Login Success Service	92
9.5.1.41 Login Failure Service	92
9.5.2 Front End HTML/JAVASCRIPT Code	93

9.5.2.1 Home Page.....	93
9.5.2.2 Follow Seller.....	94
9.5.2.3 User Location Identification.....	96
9.6 Appendix F – Evaluation and Testing.....	97

List of Figures/Tables

Figure 1: Table of Feature Comparison	16
Figure 2: Table of User Roles and Duties.....	29
Figure 3: Software Architecture.....	32
Figure 4: Table of Available Components.....	33
Figure 5: Technology Stack	33
Figure 6: Component Design	34
Figure 7: Deployment View.....	36
Figure 8: Table of Package Structure.....	36
Figure 9: Table of Folder Structure	37
Figure 10: Observation summary – Information provided in the application	49
Figure 111: Observation summary – User satisfaction on interfaces	50
Figure 122: Observation summary – Usability	51
Figure 133: Observation summary – Ease of Learning	52
Figure 144: Observation summary – Overall Impression.....	53
Figure 15: Login User - Sequence Diagram	60
Figure 16: Post Advertisement - Sequence Diagram.....	60
Figure 17: Search Advertisement - Sequence Diagram.....	61
Figure 18: Rank Advertisement - Sequence Diagram	61
Figure 19: Comment on Advertisement - Sequence Diagram	62
Figure 20: Mark Favorite Advertisement - Sequence Diagram.....	62
Figure 21: Send Messages - Sequence Diagram.....	63
Figure 22: Class Diagram	64
Figure 23: ER Diagram - Database Level.....	65
Figure 24: Home	66
Figure 25: Follow User	67
Figure 26: Add Product.....	67
Figure 27: My Store	68
Figure 28: Search Product.....	68
Figure 29: View Product.....	69

Figure 30: Search Results	70
Figure 31: Send Messages	70
Figure 32: User Profile.....	71
Figure 33: Login	72
Figure 34: Home	72
Figure 35: Follow Seller	72
Figure 36: Home Menu.....	72
Figure 37: Add Product.....	73
Figure 38: View Product.....	73
Figure 39: View Product Images	73
Figure 40: Message Dashboard.....	73
Figure 41: Create Messages	74
Figure 42: User Profile.....	74
Figure 43: Observation Summary – Information provided in the application.....	101
Figure 44: Observation Summary – User satisfaction on interfaces.....	102
Figure 45: Observation Summary – Usability	103
Figure 46: Observation Summary – Ease of learning	104
Figure 47: Observation Summary – Overall Impression	105

Abbreviation

LBS – Location Based Services

GPS – Geo Positioning System

ATM – Automated Teller Machine

SMS – Short Message Service

IT – Information Technology

API – Application Programming Interface

PDA – Personnel Digital Assistance

NFC – Near Field Communication

WAP – Wireless Application Protocol

GPRS – General Packet Radio Service

HSDPA – High Speed Download Packet Access

IP – Internet Protocol

MVC – Model View Controller

AJAX – Asynchronous JavaScript and XML

CSS – Cascade Style Sheet

DAO – Data Access Object

JVM – Java Virtual Machine

UML – Unified Modeling Language