

Design and Implementation of an Android Based Contact Control Service

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Abstract

In the recent years, as smart phones popularized, the number of people who use IMS (instant messaging service) and SNS (social network service) rapidly has increased as the usage of SMS (short message service) relatively decreased. That is why this thesis suggests a contact control service based on Android. The specifics of this service are as followed; 1) it contains an inducing function that calls acquaintances who were given a score based on the level of familiarity from saved contacts and call logs. 2) it provides an overall ranking of call log in order to grasp frequently-called-people. 3) it syncs with Facebook in order to understand who were interested in what the users have talked about. Lastly, 4) the users do not feel a repulsion since the program fully utilized the Android UI Framework and it was designed with a concern of User Experience and used an approaching method that is easy to use and eidetic. This developed system was tested on Samsung Galaxy S2 and LG Optimus LTE / Android 2.2 which were the main smart phone models.

Keywords: Social Network, Android, User Connection Management

1. Introduction

Recently, as the smart phones got popularized worldwide, the usage of SNS (social network service) based on Smart phones rapidly increased than the usage of SMS (short messaging service) service. Since SNS is an online service which is provided from websites that focus mainly on organizing social relationships or social networking, SNS allows the users to share their interests, activities, experiences, and real life stories. Most of the SNS is provided based on websites and provides an interaction between the users in forms of emails and instant messaging service (IMS) [1].

Facebook first started the SNS in 2004, Twitter started in 2006 and in 2011, Google + started the service. Using cell phones as personal computers, SNS that was first started among websites, were materialized in Smart phones that have easy portability and mobility. Smart Phones has been determined to be the best suitable communication device for SNS because of its characteristics such as simple messaging, sharing information, convenience of usage and other characteristics [2].

Social Network or basic functions of services that build social relationships connect users who have signed up for the service together, or form members of a certain group. Using these services, Facebook uses "Like" service to understand which users prefer which product, service, and contents. Not only Facebook grew by opening the social relationships created with the Social Network services, to the third party, Facebook also successfully created a

business model. In 2011, Facebook announced SDK 3.0 and provided a combined development environment in order to develop mobile app within Android mobile platform focusing on core concept such as Social Design, Social Channels, Social Plug-in, Login, Open Graph, and Dialogs [3].

Twitter is a service that allows users to post a short message with less than 140 words on the website and share it with other users in real time. It also establishes online users with “following” and “follower”, and has a quick way to send the “retweet” messages [4].

Google+ is a service that builds a social relationship similar to Facebook. However, unlike Facebook which asks for an invitation from users and permissions from other users to be friends, Google + doesn't ask for permissions from the other users. As long as the user puts people into a certain circle, they all could be friends [5].

Core forms of social network are connection between friends with their own pages, formation of reliable friends, and setting user's categories or groups. Connections in social networks are dependent on familiarity and credibility between users and require a keen interest of users.

In this study, it developed a Smart Phone application based on Android operating system that analyzes relationships with using saved records of messages and calls, shows the analyzed data in a form of graph and eventually allows the users to organize the contacts better.

2. Related Technology

2.1. Android

The start of Android began on July, 2005 with Google taking over a small Android company in Palo Alto, California. On November 5th, 2007, Texas Instruments, Broadcom Corporation, Google, HTC, Intel, LG mobile, Marvel Technology Group Ltd., Motorola, NVIDIA, Samsung Group, T-mobile and other companies formed a consortium, OHA (Open Handset Alliance).

The first mission of OHA was to develop a public standard of mobile devices. Also, OHA announced Android, their first result of mobile devices platform, which was built in the Linux Kernel 2.6. On November 21st, 2008, the first Android was announced to be an open source. Google opened up the full source code, Apache License, which included network and telephone stack. On December 19th, 2008, ARM Holdings plc, Atheros Communications, Asus, Garmin Ltd., soft bank, Sony Ericsson, Toshiba, and Vodafone started to participate in Android project. The following figure 1 shows the construction of Android.

Handset layout platform is adoptive for expanding 3D graphic library that is based on OpenGL ES 1.0, 2D graphic library, and VGA. It also uses SQLite database software for the purpose of data storage. Communication Android provides connection technologies such as GSM/EDGE, CDMA, EV-DO, UMTS, Bluetooth, and Wi-Fi. It has advantage that allows messaging SMS and MMS and provides browsers based on Web kit application which is an open source web browser [6].

2.1. Social Network

Social Network service is an online service that focuses on the building of social networks or social relationships among people and it is a concept that embraces me-media, one person community, and sharing information. It is a community website that has a purpose of expanding social relationships by introducing other users to each other. Almost all social network service these days is a web based service. Not only it provides online service, it

provides email, and IMS (Instant messaging system) to allow the users to communicate. Now when it comes to communicate and sharing information, SNS has been placed as a new way. In recent days, many people use social networking websites daily. Social Network has been receiving spotlight as a new media for the past few years. The advantage of Social Network is that it can gather thousands of users. Disadvantage of beginning social network is that it is not easy to make a profit with applied users.

However, there has been a variety of business models created in order to advertise the business by direct-indirect advertisements of licensee, profits from social games, or advertisements to users using mobile SNS. Currently, in 2012, the most widely known and commonly used social network services are Twitter and Facebook [7].

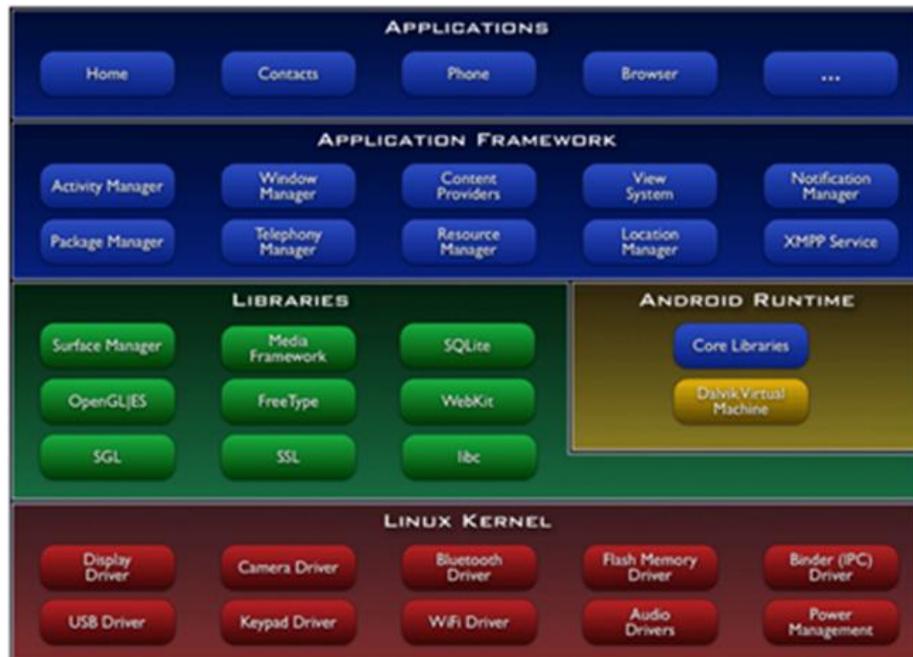


Figure 1. Android Structure

3. Contact Control Service Based on Android

3.1. Overall Construction of Service

There are 3 main parts of Contact Control Service based on Android. The following figure 2 shows the overall construction for the effective composition.

The first function is a function that rates calls. This function shows the top 5 contact members who have the most calls received or called based on the call logs. It also provides a personalized call time, normal calls, or sending texts when selected and it shows the overall rating by a circle graph.

The second function is a function that controls friend list. This function gives scores after reconstructing data based on call logs and contacts of user's Smart Phone, allows the users to give individual scores, and finally, it helps the users to organize the contacts by familiarities registered in the Contact. This function also provides individual calls, texts, and detailed contact information.

The third function is a function that controls Facebook. The function synchs with Facebook to show who commented on user's statuses, and who posted on the user's wall at a look. Utilizing this function, it is possible to see who has a higher interest in the user's Facebook activity.



Figure 2. System composition of the service

3.2. Detailed Activities of each functions

This chapter will explain about activities and materialization results of the developed service. As Figure 3 explains, it internally analyzes call volume based on call logs from Smart Phone database, and provides the information to the users. As Figure 4 explains, it also internally analyzes and reorganizes call logs and contacts from Smart Phone database and provides the reorganized information to the users. It also requests data from Facebook-Server through Facebook Manager and provides the data to the users after analyzing and reorganizing.

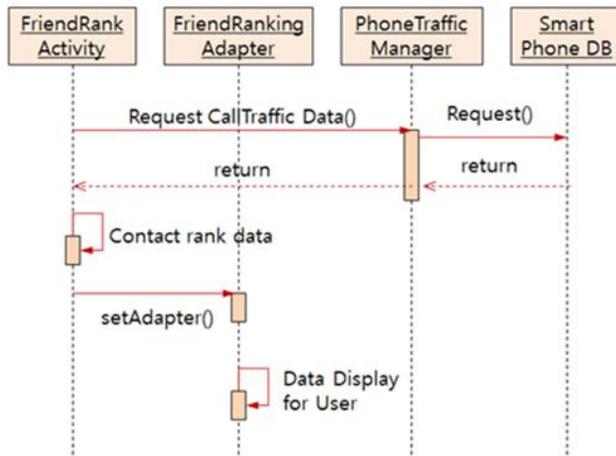


Figure 3. Call rate sequence Diagram

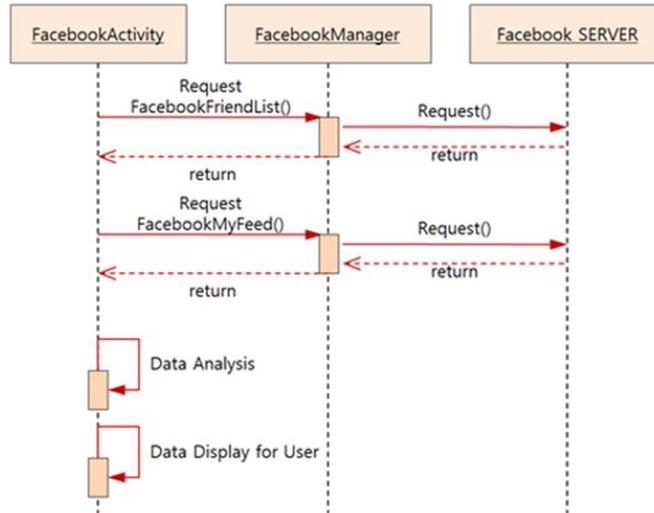


Figure 4. Facebook control sequence Diagram

3.3. Materialization and Results of Service

The service was designed clearly by fully utilizing Android UI in order to reduce repulsion for users using applications for the first time. It was designed as directly as possible in order to make it convenient to use, and show to all information at a look.

Figure 5 shows the rank of call. It shows the number of hours of recent calls and how many hours of call with a certain person. This rank can be set every 7 days, 15 days, 30 days or all days. It is easy to choose necessary functions by touching the person which will show buttons such as sending messages, emails, and call. This is a very convenient function since it means there are more interactions between the user and another person as the rank gets higher.



Figure 5. Setting of call ranks and duration

It creates a circle graph as Figure 6 shown below, once the call logs were touched.

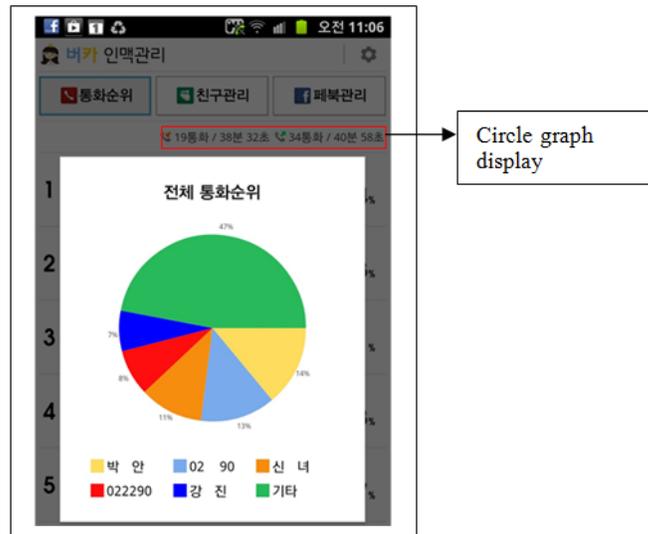


Figure 6. Overall call rank circle graph

If the bar graph is touched, it shows the call hours as shown in Figure 7.

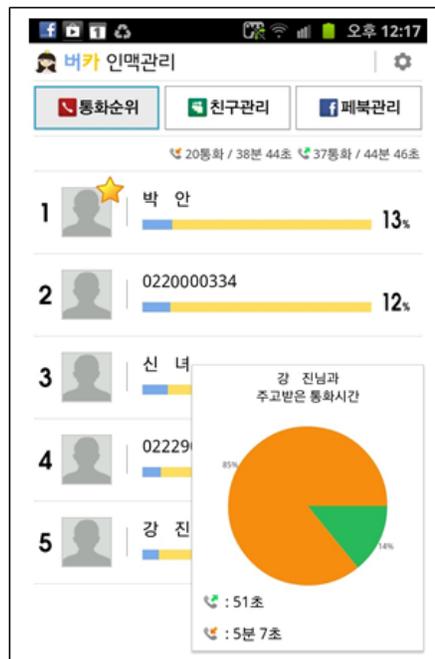


Figure 7. Call logs between the user and the person



As shown in Figure 8, once Contact control was touched, it provides familiarity with scores according to call logs and once the person was touched, calls, messages, or emails directly.

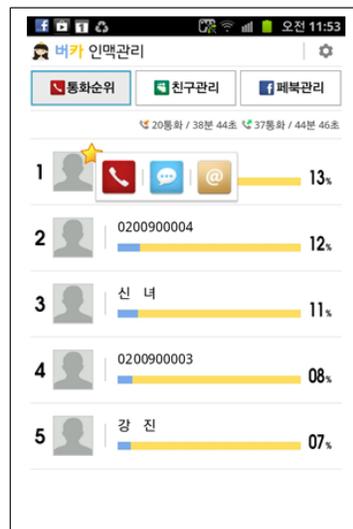


Figure 8. Contact Control

If facebook control was touched, it allows the user to understand who have the most interest in what the users have wrote.



Figure 9. Facebook Control

4. Conclusion

In this thesis, it suggested a Contact Control Service based on Android. The developed service utilized Android UI Framework in order to show information directly at a look.

The specifics of this service are as followed; 1) it contains an inducing function that calls acquaintances who were given a score based on the level of familiarity from saved contacts and call logs. 2) it provides an overall ranking of call log in order to grasp frequently-called-people. 3) it syncs with Facebook in order to understand who were interested in what the users have talked about. Lastly, 4) the users do not feel a repulsion since the program fully utilized the Android UI Framework and it was designed with a concern of User Experience and used an approaching method that is easy to use and eidetic.

Using Galaxy S2 of Samsung, Optimus LTE and ANDROID 2.2 of LG, this service has been proven its own performance and also proved to have no problem in bring Data from Smart Phone. In order to materialize extra functions to this service, studies about application and SNS data analysis based on Android are continuing.

Acknowledgements

This work is the modified and extended version of presentation at the proceedings of the 11th KKITS Spring Conference (18-19, May, 2012, ChungJu, Korea).

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