

RED LEMON GROUP CHAT ANDROID APPLICATION USING TEXT-TO-SPEECH AND AUTOMATIC SPEECH RECOGNITION SYSTEM

Nur Hadisukmana¹, Anisa Lestari², Rusdianto Roestam³, Eko
Syamsuddin Hasrito⁴, R.B Wahyu⁵, Yuyu Wahyu⁶

- (1) President University, (Contact: nurhadisukmana@president.ac.id)
- (2) President University, (Contact: anisalestari@president.ac.id)
- (3) President University, (Contact: rroestam@gmail.com)
- (4) President University, (Contact: ekosh2515@gmail.com)
- (5) President University, (Contact: rbw0101@gmail.com)
- (6) President University, (Contact : yuyuwahyusr@yahoo.com)

Abstract

Communication is the most essential thing that people do in daily activity, many way to people in communicate between each other. Commonly peoples choose the easy and practical way for any communication, using a smart phone is the exact way, it easy to operate and allow bring to everywhere. Meanwhile there are many research who claim mobile phone is one of several cause in traffic accident this because people tend to keep using the smartphone while driving which people have a limit concentration and limit physical bodies. Nowadays many smartphone offered some free applications to communicate both messaging or calls and have distinct feature of each. However most of all feature have not able to solve the kind of issued above. Red Lemon is group chat application that have smart solution to be able communicate even in some activity that need extra concentration. It able to messaging and make a call using speech recognition system and able to get information of the message without touch the phone using text-to-speech system, it will read out all the message received. Hence it very useful for many kind of peoples condition.

Keywords : Android application, Text-to-speech, Speech recognition

1. Introduction

RedLemon Group Chat is simple mobile android or web group chat application that can be able to connect multiple users to be in one conversation. It provide a chat application that can access through web and also mobile using socket, it will make user able to connect between web to web, web to mobile android, and mobile android to mobile android with different experience to chat.

Simple because it provide the main single chat room page that directly fill user need to communication with each other. This application is going to be different with common chat application because it have new smart feature that adapt speech recognition and also text to speech, it can help people to operate the application which have activity that need both physical and concentration to do something else.

The user can have experience to chat with talking however it will convert to text instead, rather than a voice and with giving some command voice then it will command the application to type the message and send the message, and the application is able to read the

message when the new message is received, also this app able to call using speech.

Literature Review

A. Dangerous of being distracted while driving
According to federal Communications Commission (FCC) statistics [5]:

- The National Highway Traffic Safety Administration reported that in 2012 driver distraction was the cause of 18 percent of all fatal crashes – with 3,328 people killed – and crashes resulting in an injury – with 421,000 people wounded.
- Forty percent of all American teens say they have been in a car when the driver used a cell phone in a way that put people in danger, according to a Pew survey.
- The Virginia Tech Transportation Institute found that text messaging creates a crash risk 23 times worse than driving while not distracted.
- Eleven percent of drivers aged 18 to 20 who were involved in an automobile accident and survived admitted they were sending or receiving texts when they crashed

B. Network Socket

A network socket is an endpoint of a connection across a computer network. Today, most communication between computers is based on the Internet Protocol therefore most network sockets are Internet sockets. Sockets provide the communication mechanism between two computers using TCP. A client program creates a socket on its end of the communication and attempts to connect that socket to a server. It is a handle (abstract reference) that a local program can pass to the networking application programming interface (API) to use the connection, for example "send this data on this socket". Sockets are internally often simply integers, which identify which connection to use. Socket are consist of three main elements which are IP address, Transport Protocol, Port Number. For example (1.2.3.4, UTP, port 80), to send "Hello, world!" via TCP to port 80 of the host with address 1.2.3.4, one might get a socket, connect it to the remote host, send the string, then close the socket [7].

When the connection is made, the server creates a socket object on its end of the communication. The client and server can now communicate by writing to and reading from the socket.

C. Voice Recognition

Voice recognition is the process of taking the spoken word as an input to a computer program. This process is important to virtual reality because it provides a fairly natural and intuitive way of controlling the simulation while allowing the user's hands to remain free.

D. Speech Synthesis

Speech Synresearch or text-to-speech is the artificial production of human speech. A computer system use for this purpose is called a speech computer or speech synthesizer, and can be implemented in software or hardware products. A text-to-speech (TTS) system converts normal language text into speech. Other systems render symbolic linguistic representations like phonetic transcriptions into speech [10].

2. Methodology

In order to develop the application, the methodology that is used is Rapid Application Development (RAD). "Rapid application development (RAD) is a software development methodology, which involves iterative development and the construction of prototypes." This is accomplished by focusing on streamlining the build process, called the "development cycle." The RAD system is split into four separate phases: Requirements Planning, User Design, Construction and Implementation.

3. Discussion

RedLemon Group Chat is basically chat application that have kind of similarity to the other application such as WhatsApp, Line and other chat application which have

the main feature is chat that the function is to communicate each other user through internet.

Actually the application idea is combining of several application like whatsapp or another similar chat application and google now. The main feature of WhatsApp is chat and the google now have the main feature speech recognition. Then it combining to be application that have different feature with others app because the main feature chat has empowered by the additional

Use-case Diagram to is use for identity actors, initial set, and sequences that involved in application to provide measurable information of system then it can easy to analysis. The use-case of the RedLemon is describe by Figure 3.1.

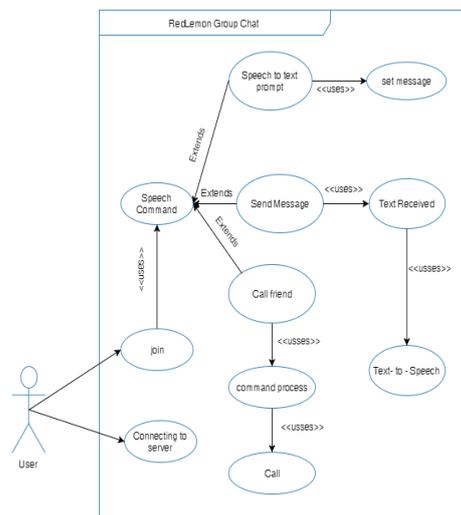


Figure 3.1 Use-case Diagram of RedLemon Group Chat

The introduction page will displays to user a Splash screen that contains logo of the Red Lemon apps for 3 second, the instruction page also will comes up after the splash screen is finish. It have two pages that will tell the user about how to use the speech feature and user able to using button skip, next, back and finish to operate the instruction page with animated slide.

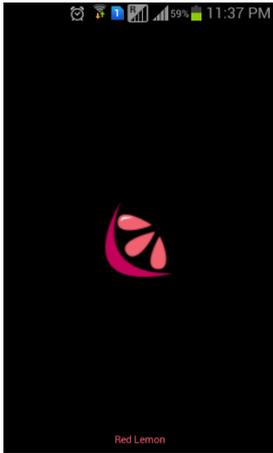


Figure 3.1 Red Lemon logo splash screen

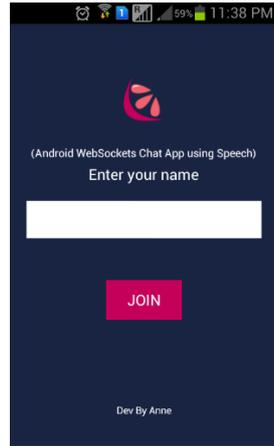


Figure 3.4. Red Lemon initiate page



Figure 3.2. Red Lemon instruction page one

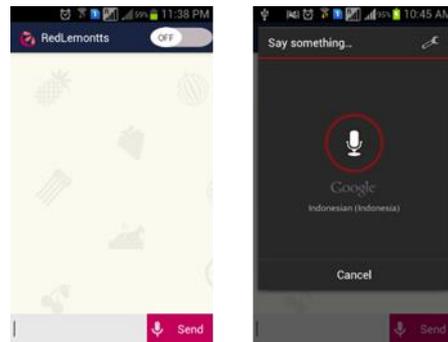


Figure 3.5. Red Lemon chat screen and google speech input dialog

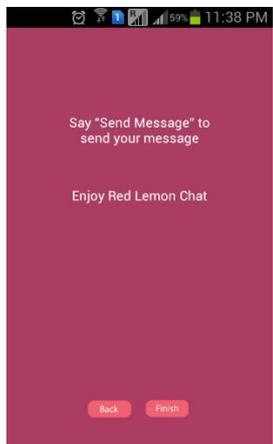


Figure 3.3. Red Lemon instruction page two

In the initiate page will displays user a simple form page to input name of the user and button start to join the conversation.

In the main page is where the user will do the chatting activity whether operate using speech or manual. To operate by speech user is required to waking up the google speech input dialog that will typing the message by say "wake up", to send the message user need say "send message" in the proper pronounce, for making call user do the same as waking up the google dialog and just say for example "call Anne". To operate manually user just click the speaker button to activated google dialog and click send button to send the message. Switch that placed in the menu bar is for activate the reader, when it turn to ON then the incoming message will read out load by the machine voice.

Testing Scenario and Result is sequences of the several user case according to the application that will be test in order to analyze the system in working. This Scenario contains of several case as planned. The Table 6.2 are Red Lemon's scenario plan.

Tabel 3.1. Scenario testing of Red Lemon Application

No.	Step Name	Scenario	Expected Result	Evaluation
1.	Step 1	Open Red Lemon Application	Application should be display a splash screen of the application	Work Properly
2.	Step 2	Waiting the splash screen for 3 second	Application should be assign to the next page a welcoming page one after 3 second.	Work Properly

3.	Step 3	Click button next	Application should be able move to another page a welcoming page two.	Work Properly
4.	Step 4	Click button back	Application should be able move to the previous page, welcoming page one	Work Properly
5.	Step 5	- Click button skip in the welcoming page one. - Click button finish in the welcoming page two	Application should be move to the join form page.	Work Properly
6.	Step 6	Fill name and click button join	Application should be direct to the main chat page and show notification of user client connection.	Work Properly
7.	Step 7	User say "wake up"	The application should display the Google Speech Input Dialog.	Work Properly
8.	Step 8	User speak "Call Nisa"	The application should directly call contact named Nisa	Work Properly
9.	Step 9	After several second, say "wake up" with good pronounce	The application should display the Google Speech Input Dialog.	Work Properly
10.	Step 10	User speak a message in bahasa "Hai, apa kabar?"	The application will catch the voice, and automatic type in the text message box in bahasa.	Work Properly
11.	Step 11	User say "wake up"	The application should display the Google Speech Input Dialog.	Work Properly
12.	Step 12	User speak message in English "Hallo, how are you"	The application will catch the voice, and automatic type in the text message box in English.	Work Properly
13.	Step 13	User say "send" with proper pronounce	The application should make the message send to the chat screen.	Work Properly
14.	Step 14	Switch the toggle button in the menu bar to ON	Application show notification message reader is on.	Work Properly
15.	Step 15	User receive new message	The message and user name should be able to read out aloud by machine	Work Properly
16.	Step 16	User click button	The application should display	Work

		speaker Note : messaging with manual button	the Google Speech Input Dialog.	Properly
17.	Step 17	User speak any message in Bahasa or English	The application will catch the voice, and automatic type in the text message box in Bahasa or English.	Work Properly
18.	Step 18	Click send button	The application should make the message send to the chat screen.	Work Properly

4. Conclusion

The application is accomplish the main purpose which is helping people to able access the message information while having limited physical contact and concentration.

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