



Design of Chatting Application Based on Android Bluetooth

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Abstract

Bluetooth provides the communication on low-cost, low-power basis. Wireless communication can also be done with the help of Bluetooth technology in a mobile communication. Short-range establishment of two-way communication has occurred without any support of the network. Bluetooth is integrated into Android which is a mainstream Smartphone platform as a mean of mobile communication. Nowadays Android becomes the latest technology in the Smartphone's which provides the open sourcing and powerful application API. Thus we design a chatting application based on android Bluetooth which establishes a connection between smart phones using Bluetooth and then messages are exchanged between them.

Keywords: *Component; Android; Bluetooth; Wireless Communication; chat*

1. Introduction

In recent years, with the development of mobile communication and Mobile terminal, especially the release of Android smart phone platform has injected new vitality to the mobile space. Android is an open sourcing mobile operating system based on Linux which is a completely open and integrated platform for mobile devices. Android platform consists of the operating system, middleware and user interface and application software. Bluetooth technology is a mature short- range wireless communication technology. The working frequency band of Bluetooth does not need a license around the globe. The advantage of Bluetooth technology is reflected in the low price, easy to control and non-visual distance limitations. Bluetooth is an important feature of the smart phone, which is integrated into the Android platform, as the Android mobile network communication module. The Android system provides many Bluetooth APIs for developers to call

The majority of the phone communicates with each at her generally through China Mobile or China Unicom gateway, which have to pay related costs. The purpose of the chat room which based the Bluetooth of android is connect phones into a local area network, then we can communicate with each other without any cost .This paper carry out a chat system via the API of the Bluetooth on the Android platform. Through the Bluetooth module, android phones can be divided into client and server and then the real-time chat between friends strangers can be accomplished.

2. Literature Review

The name “Bluetooth” and its logo are trademarked by the privately held trade association named the Bluetooth Special Interest Group (SIG). The name Bluetooth was a code name used by developers of this wireless technology. But as the time past name Bluetooth Stuck.

10th Century’s Danish king Harald Bluetooth had been influential in uniting Scandinavian tribes in single kingdom after the war when the region was turn into parts. Now these days Bluetooth implication of Bluetooth does the same reunite different industries such as Computers with cell phones with single low power globally available short range radio frequencies named as Bluetooth The concept behind Bluetooth had its origins in 1994 when Ericsson began researching the idea of replacing cables connecting accessories to mobile phones and computers with wireless links.

The actual history of Android starts when Google has had purchased and Android inc. in 2005. But the development did not start immediately. The actual progress on android platform starts when 2007 Open Handsets Alliance has announced the Android as Open Source platform and year later the Android SDK 1.0. In the same 2008 the G1 phone was produced by HTC and was retailed within the T-Mobile carrier. In the next two years came out 4 versions of Android. In 2010 there were at least 60 devices running android and it becomes second after Blackberry the best spread mobile platform. (Gargenta 2011, 3-6). And hence developing the research and design of chatting application based on android Bluetooth.

3. Design of Android Bluetooth communication

This is to use the Bluetooth API provided by the Android platform to implement communication between Bluetooth devices. Bluetooth communication is based on unique MAC. Taking into account the security issues, the Bluetooth device must be paired before using Bluetooth communication. The connected devices will be shared with a RFCOMM channel to transmit data. Therefore, the process of Bluetooth communication includes Query Bluetooth, we can use Bluetooth Adapter to get the Bluetooth Activity and the method of onActivityResult () to get the Bluetooth connection intent. Figure3 shows the query pairing process. Figure 3 shows the query pairing process. Finding Devices, we need to open the Bluetooth user name and MAC address to pair the Bluetooth. Connecting Bluetooth. Figure 4 shows the process of pairing connection. Bluetooth communication to achieve the following. Following is the detailed design of the Bluetooth communication.

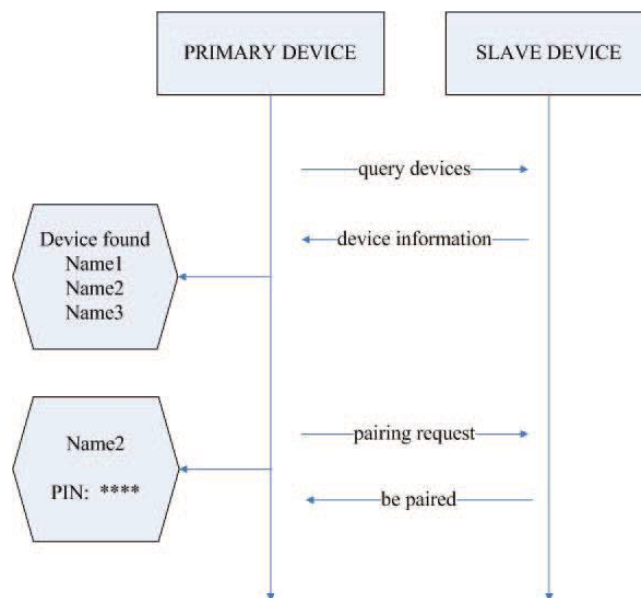


Figure 1. Bluetooth inquiries, the pairing process

Bluetooth communication, similar to TCP traffic, we need to have the server and client. In this chat system, an Android phone as a Bluetooth server-side, the other Android phone as a Bluetooth client. Client connected to the server and receives message txt from server, also send message text to the server. The server also able to send and receive text messages.

This system mainly used the Android system components is the Activity and Service. In the Android system each Activity is an independent process, each Service is an independent process, while the Activity and Service must be communicate with each other, then you need to use the Binder mechanism [4]. Android Binder mechanism abstract defined by Binder interface. In the upper, its concrete implementation is complete by AIDL. The main program of this system includes three files: BluetoothChat.java BluetoothChatService.java and DeviceListActivity.java, detailed features can be seen below the description shown in Figure 2:

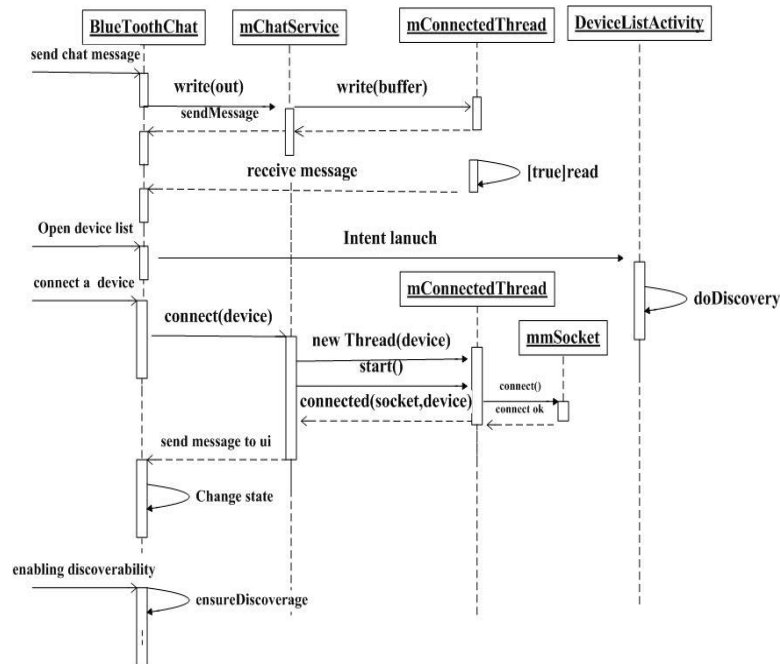


Figure 2. The system as call sequence diagram

This uses the method of start Discovery () int the class Bluetooth Adapter to execute an asynchronous way to get around the Bluetooth device, Because it is an asynchronous method so we do not need to consider t he thread i s blocked. The whole process takes about 12 seconds [3]. Then we register a Broadcast Receiver object to receive the Bluetooth de vice information. We filter ACTION FOUND Intent action to obtained tailed information for each remote device. Additional parameters in the Intent field EXTRA DEVICE an EXT RA CLASS, which contains the device type of the object and the object of Bluetooth Device. Pairing a Bluetooth device we can call the method of getBondedDevices () in the class Bluetooth Adapter to obtain a paired device. The method will return Bluetooth device array to distinguish between each paired device.

4. Implementation Results

This research and design of chatting application using android Bluetooth contains the text messaging through Bluetooth between the two android smartphones. Following window result shows the server window containing issues like Send Message, Start server, Clear message and Close App.

4.2 Implementation 2:

The Second window result is for the client window side which shows the connection with device properly means connection is established between both the android smart phones. Consisting of stat client, receive, clear message and close App. Some of which the functionalities are same as the server side.

4.1 Implementation 1:

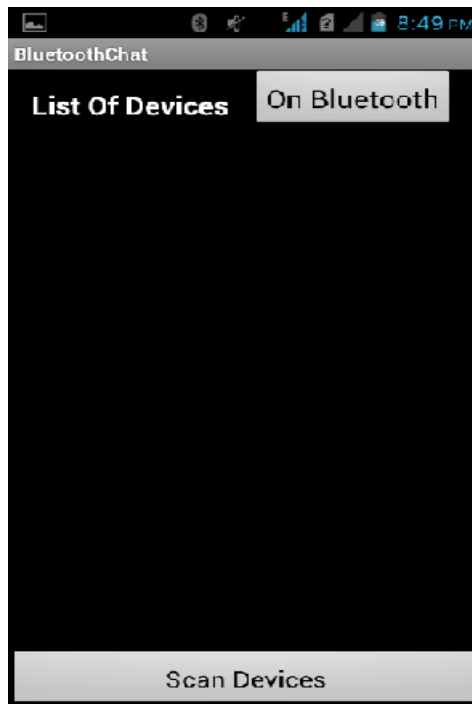


Figure 4.1 Server Bluetooth chat window1 showing all features

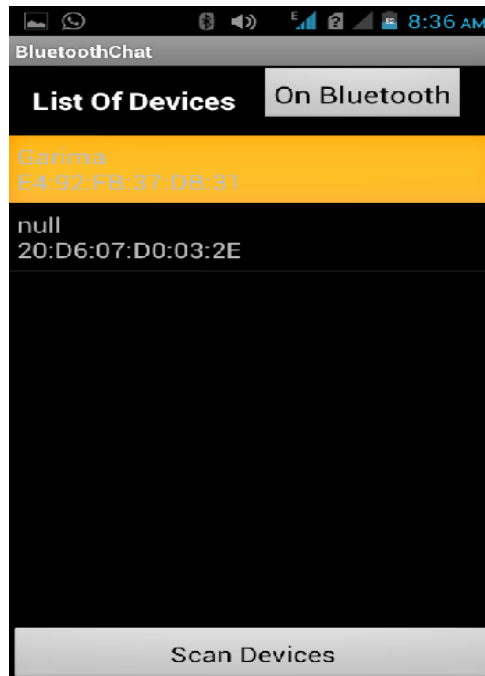


Figure 4.2 Client Bluetooth chat window1 showing all features

Start Server will Enable the Bluetooth on server side and active for the communication after scanning for the devices and choosing one of them for the communication.

When server sends the message to client by entering into the text field and the pressing send Message button will send the above entered message to the client as shown in fig 4.3. Server can also receive message.

Start client will enable the Bluetooth on client side if not enable Receive will receive the message coming from the server side. Close

The client receives the message as soon as the connection is established between the two devices. The client can also send message to the server or another device after the establishment of the connection. Bluetooth enables or provides the better improvement over the android devices.

By receiving message from the server the similar connection can also be established within the same range. Area to be covered into the Bluetooth range is limited.

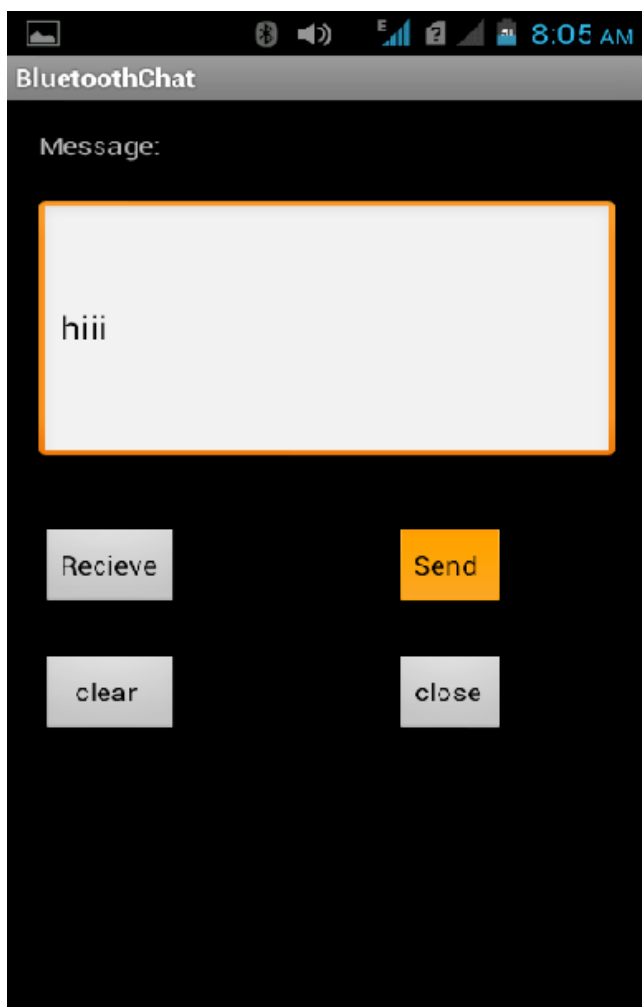


Figure 4.3 Server sends message to the client window2

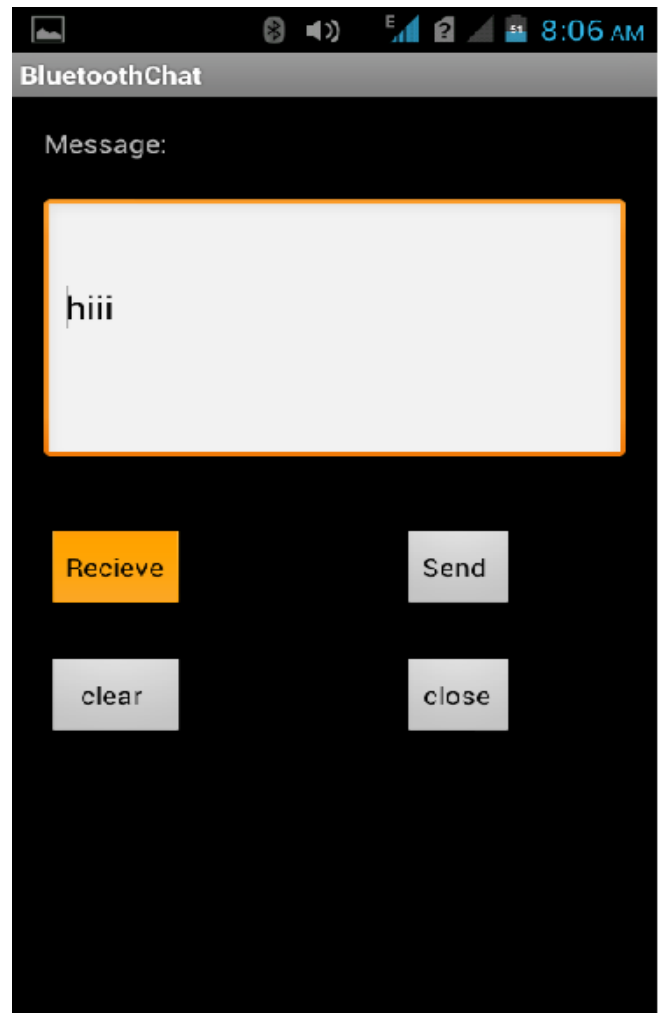


Figure 4.4 Client receives the message from the Server window2

5. Conclusion

Bluetooth chatting is an innovative approach to the mobile world. This application shows use of Bluetooth in terms of chatting. Means persons can chat via Bluetooth. The main midlet has just a list which has two values server and client. By selecting one of these two values, the corresponding instance is created. Midlet is used to initialize the connection. It does following thing at here. First, it starts the application and search the Bluetooth device. It sends the signal to the server class. Second, it can run, pause and stop the application. Third, it shows alert using setAlert function on every changing. Server class goes active when it go signal from the midlet class. It sends the hello world string with the string to the other devices. Client class works to respond the other Bluetooth device server.

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