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Bluetooth Chat: An Android Chatting App Based on Bluetooth

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Abstract: ***An Android messenger application that connects through Bluetooth is the topic of this discussion. The main ideas covered in this article are: (i) users are able to chat with one another through Bluetooth connections between two or more Android mobiles. (ii) Users can periodically sync and modify their chat in the server thanks to Bluetooth connections between a server and an Android cellphone. iii) The data structures that are utilized to store and update the data (messages) in relation to the appropriate usernames. In order to achieve robustness and send error-free messages, state machines and finite expressions are used. This software uses a phone's built-in Bluetooth feature even though it doesn't require an internet connection. Therefore, it can be used for Free communication over short distances up to a certain distance (either Thirty or One Fifty feet, subject to the hardware). The Bluetooth feature of a smartphone is crucial, and both the Android cell phone network and a platform include it.***

Keywords: Bluetooth, Android, Chat, Messaging, Communication, Wireless

I. INTRODUCTION

An Android may be a free, open-source mobile operating system. middleware, or software the currently running system, computer programmes, and software make up the Android platform. These days, using chat for various purposes is extremely popular. Whats-app, We-chat, Hangouts, and other similar apps are extremely popular. However, these messaging apps hinge on mobile data, might be a deposited option, or Wi-Fi, which could vary from time to time to be accessible and has inconsistent signal strength when it is. Two technologies came to mind for achieving this: Wi-Fi (i) Bluetooth (ii)

A. Difference between Wi-Fi and Bluetooth

Wi-Fi devices have a propensity to interfere with the signalling of nearby devices, which can be extremely harmful when working with some complex and life-saving devices (such as in a medical setting).The technology behind Wi-Fi also requires extra hardware, such as a router, modem, and wireless hotspot, as well as a comparatively higher amount of power.

The battery life of Bluetooth is increased and it consumes less power. Inside a small building, its operating range of 28 feet is sufficient. 721 Kbps is a perfectly suitable data transfer rate for the Bluetooth protocol. It is readily accessible because it is pre-installed on every smartphone running Android. In addition, establishing a Bluetooth network is significantly less expensive than establishing a network via Wi-Fi.We decided to use Bluetooth rather than Wi-Fi as a means of communication method because of every one of the above.

II. LITERATURE REVIEW

Android was first created after Google acquired Android Inc. in 21st Century in 2005. However, the change didn't start right away. Development of the platform known as Android got started in 2007 with the release of the Software Development Kit (SDK) for Android 1.0 and the Android Free and Open Source Project. In the same year, HTC manufactured and distributed the G1 cell phone over the T-Mobile's network. Over the following two years, four different Android versions were released. At least 85 devices were running Android in 2011, making it the second most widely used mobile platform behind Blackberry. (Gargenta 2011, pp. 3-6). increasing research into and the design of a chatting application that is solely based on Bluetooth for Android.

Our daily lives have become completely dependent on chat applications, which make it easy for us to connect and communicate with others. While the majority of chat applications rely on an internet connection, the study of Bluetooth-based alternative communication techniques is gaining recognition.

Due to the fact that Ericsson was responsible for its original invention, Bluetooth technology is a widely used field of study.which is now known as Sony Ericsson and which was once a major manufacturer of mobile phones Senior scientist Jaap Haartsen, a native of the Netherlands, and air interface Sven Mattes sat back in 1994. In March 2001, a first Bluetooth-enabled gadget was released in world. In today's world, it is challenging to found a product that does not include a Bluetooth connectivity transceiver. The term "Bluetooth" trademarked by the Bluetooth Special Interest Group (SIG), a privately held trade association.

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The name Bluetooth used to be a code name created by the Wi-Fi technology's creators. However, as time went on, Bluetooth became stuck.

A. Android Libraries

Android libraries are pre-compiled bundles of code that give Android applications particular functionality and features. Because these libraries are made to be simple to integrate into Android projects, developers can use pre-existing code and components instead of creating everything from scratch.

1) android.app- Provides access to the utility and serves as the base for all Android apps.
2) android.view- The fundamental building components of software user interface.
3) android.OS- Access to contemporary operating system features like messaging, system services, and communication among processes is provided for apps.
4) android.web-kit- A set of guidelines designed to make it possible to build web browsing functionality into apps.
5) android.text- Utilized to present and change text on displays.

III. ARCHITECTURE OF ANDROID BLUETOOTH CHATTING

A Wi-Fi innovation that is renowned for transferring data over distance that are not long is Bluetooth. This affordable transmission technology is used in a number of digital products, including handheld devices. The Blue Chat programme would use a number of these protocols. Up to 721 kilo-bits in one direction and 57.6 Kbps in the other for every second are transmitted, Bluetooth is capable of participating in networks or communications in both half-duplex.

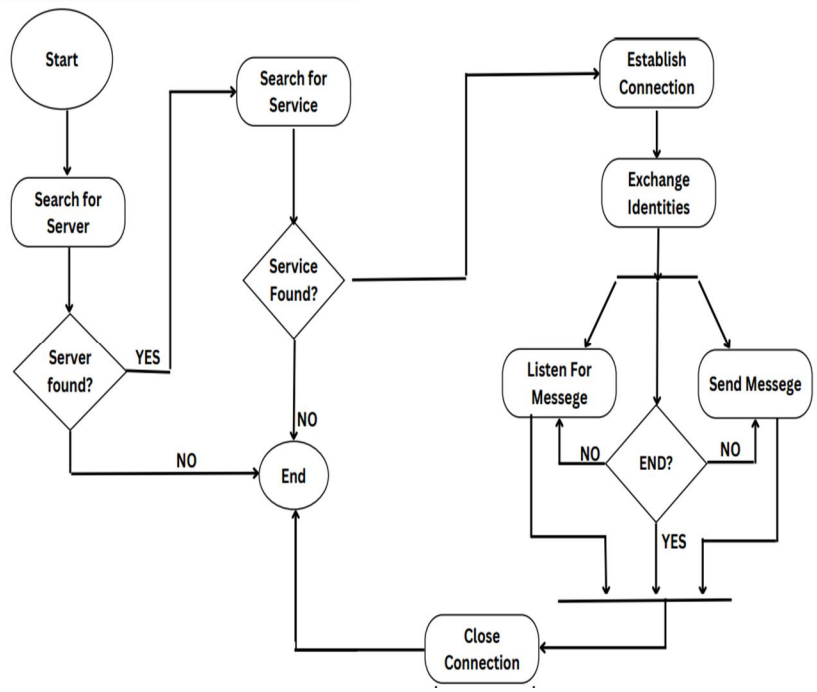


Fig- Architecture Flow Diagram for Bluetooth

A. Join as a server:

One device must play the role of a server by maintaining an launching the BluetoothServerSocket when you want to connect two devices. The role of the server socket is to track requests for connection that come in and, in response to an accepted request, to offer a corresponding BluetoothSocket. The BluetoothServerSocket can—and should—be deleted when the BluetoothSocket is received from it, unless you choose to offer the device.

The actions listed below must be followed in order to establishing a server socket and obtaining a connection:

1) Call the function listenUsingRfcommWithServiceRecord() to obtain a BluetoothServerSocket
2) Call accept() to begin listening for connection requests.
3) If you don't want to permit any more connections, you should call Close().

B. Join as a Client

To start a connection with a remote device that is accepting connections on an open server socket, you must first obtain a BluetoothDevice object that represents the distant device. See Finding Devices to learn more about creating a Bluetooth Device. The Bluetooth Device should then be used to create Bluetooth-socket and start a connection.

C. Primary Methodology

1) Get a Bluetooth-socket using the Bluetooth Device by using createRfcommSocket To ServiceRecord(UUID).
2) Call connect() to create the connection.

IV. RESULTS AND CONVERSATION

1) The two Android cellphones' Bluetooth text messaging is conducted it included in this study and graph of a chat application using Android Bluetooth. The server window has the following effects: Sign in ,Chats, Group Chats, Devices, Create New Group.
2) There is a patron window side that is installed on each of the Android smart phones and displays a reference to the system's fantastic ability connection. comprising a Paired Devices, Available Devices, Scan For Devices, Make Discoverable. . Because of the server side, some of the features are same.

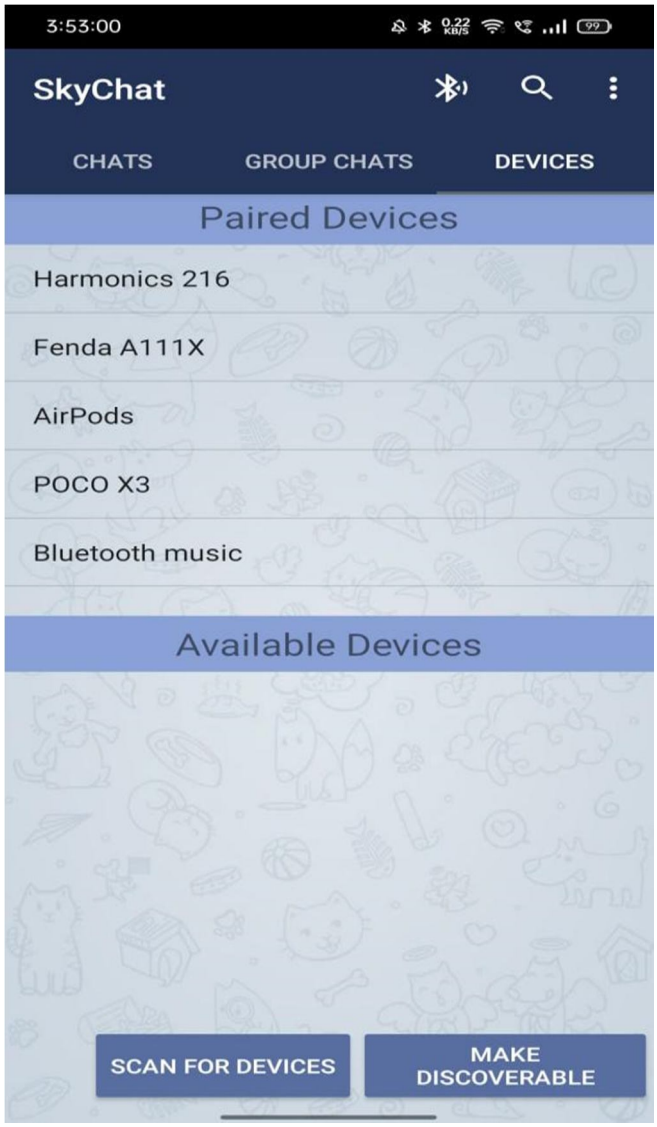


Fig- Bluetooth server chat, all features displayed

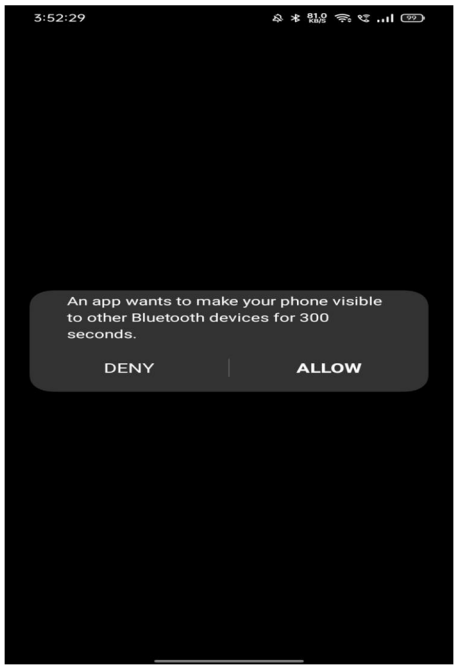


Fig-Show all features for client Bluetooth chat

3) Start After searching for available devices and selecting one to use for communication, the server will turn on Bluetooth on the server side.

4) When the server enters the message filling in the text field and clicks "Send," the client receives it. Message- button send the buyer the message you just typed in, as illustrated in fig. Server can also receive messages.



Fig- Server sends messages to the client



Fig-The message is delivered by the server to the client.

5) Client will enable Bluetooth connectivity if it isn't already. The message arriving from the server side will be received by the receiver.

6) The message is immediately received by the client because a link has been established between both of the devices. The customer may send messages to the server or to the system after a connection has been established. Bluetooth provides a greater improvement compared to Android smartphones. The same connection can be formed within the same range by receiving messages from the server. There is a limited area that can be covered within Bluetooth's range.

V. FUTURE WORK

A. Increasing Security Through Encryption

Encryption stage of this project is absolutely crucial. Users of this particular chat can only view messages sent between two persons due to end-to-end encryption. This is made possible by encrypting messages before they leave a user's device. Only the intended recipient (end user) can decrypt these messages. Developers can put end-to-end encryption into practise using private/public key theory and securely closed encrypted messaging service. Virgil's Android Software Development Kit allows developers to safely generate, store, and provide robust.

VI. CONCLUSION

It can be deduced from a thorough review of the system's advantages and limitations that the system is operating in accordance with the project's goals. The installation process is simple. The installation of the application requires an internet connection once, after which it is independent. The user interface is simple to use and doesn't require any specific knowledge or abilities to use. This technical report's methodology part goes into depth on the system's implementation. The user interface is straightforward and doesn't require any specific skills or knowledge to operate.

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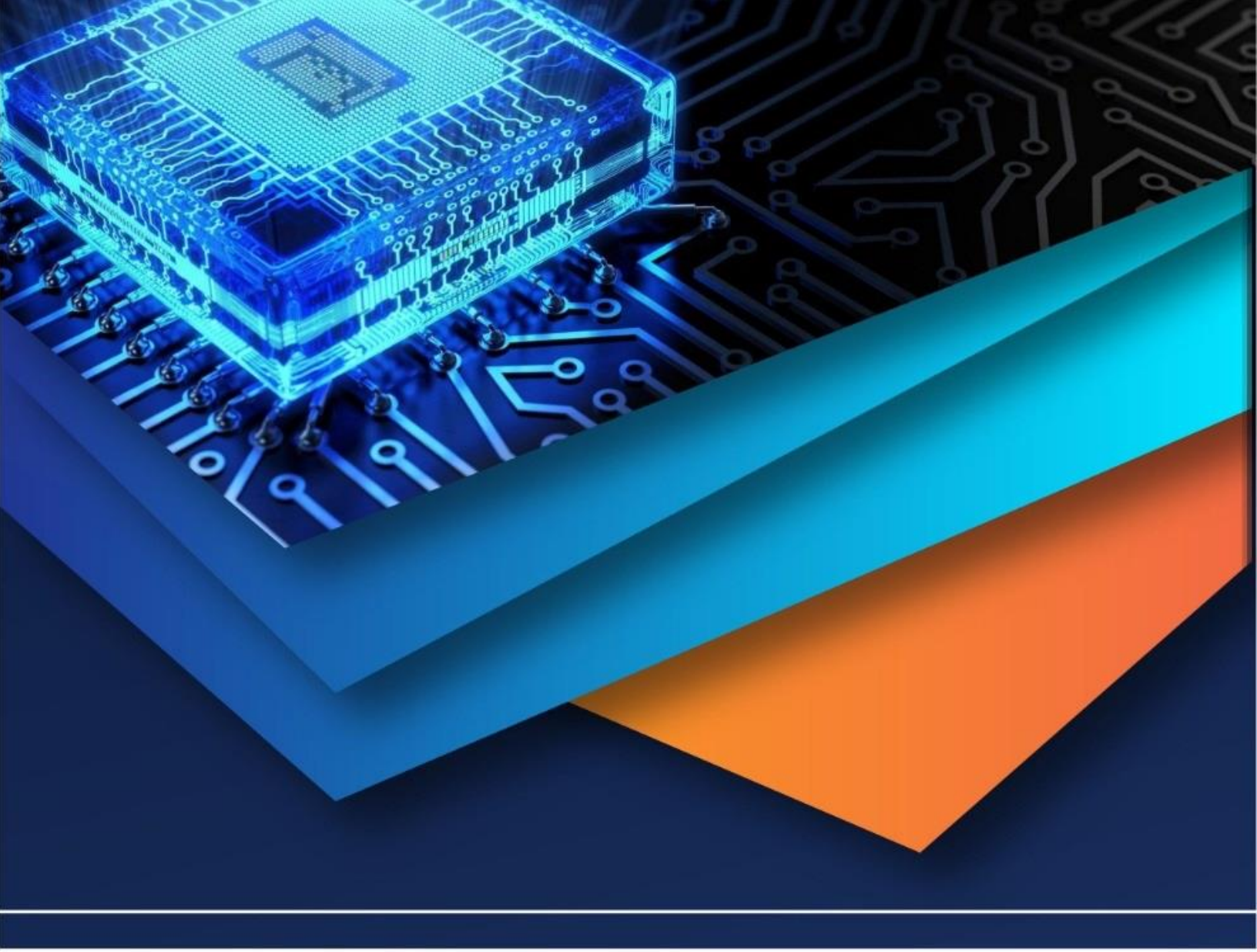
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