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Bluetooth Based Chat Application

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Abstract

Communication is very important between the people in all areas, because through communication we share knowledge, exchange ideas, chat with friends etc. Communication plays a vital role in any situation to full fill our needs/tasks. At present, communication depends on the network provided by internet for which user has to pay a large amount of money. In this project we have tried to develop a chat application using Bluetooth, through which we can connect two or more mobile devices and establish chat at free of cost.

Bluetooth provides the short-range of two-way communication without any support of the network. Bluetooth is integrated into Android (which is a Smartphone platform) as a means of mobile communication. Nowadays Android becomes the latest technology in the Smartphone's due to its the open sourcing, thus we designed 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; Communication; Chat.*

INTRODUCTION

In recent years, with the development of mobile communication, 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, 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 no price, easy to control. Bluetooth is an important feature of the smart phone, which is integrated into the Android platform, as the Android mobile network communication module.

The main objective of the project is to build a chat application for chatting between Bluetooth enabled devices. Our aim is to create an application to allow people communicate with each other without the use of internet, rather through Bluetooth network. This can be done when they are within the range of each other (approximately 10 meters). The reason behind development of this project is that most mobile devices today are Bluetooth enabled, so this technique could be cost-effective. It can be used as an effective tool for chatting within an organization.

LITERATURE SURVEY

We have referred few research papers at the time when we were working on our idea to gain knowledge about our project. Some related research papers are as follows:

By Gayatri Erale[1] :

This project was basically based on client server model where Java was used as a programming language and one device acted as a server while other devices acted as clients. It was basically based on TCP network connection. The chatting app was developed through Java 2 micro edition for applications which run on small devices like mobile devices. It is a stripped-down version of Java targeted at devices which have limited processing power and storage capabilities .

J2ME is a reduced version of the Java API and Java Virtual Machine that is designed to operate within the limited resources available in the embedded computers and microcomputers .J2ME is a subset of J2SE with some API's added specifically for the wireless devices. Just like for J2SE we have JVM (Java Virtual machine) to run the java

applications; the J2ME applications run on KVM (kilo Bytes Virtual machine).

By Amrita Deb[2] :

The work comprised of the chatting app where the text was sent with an extension of .txt. If this was recognized by receiver then he/she can reply back to the sender. The server has a file named 'ChatHistory.txt' (or creates one if it's not present) where it stores the chat histories.

PROBLEMS IN EXISTING SYSTEM

Chatting has largely been a PC-based. But when it comes to chatting over cell phones, the alternatives are costly like Internet packs or icostlier communication. Moreover the cost of laying down the cables, network wires and the cost and effort of their maintenance are also a key issue.

Wi-Fi devices tend to interfere with signalling of surrounding devices which can prove quite harmful when dealing with certain sophisticated and life saving devices(such as in a medical environment).In addition to this, Wi-Fi technology requires comparatively more power and also other devices: Wi-Fi Router, Wi-Fi Modem, Wi-Fi Hotspot.

PROBLEM STATEMENT

Our focus is to develop an application through which communication gets free of cost and also there is no need to lay down wires for setting up connection. Existing system has many drawbacks such as you have to first carry forward all the user id and other details to connect your device with other and also sometimes connection in between breakdown due to internet speed which also leads to the disabling of sharing of files from one device system to another device system.

METHODOLOGY

Android Platform

Android is a mobile operating system developed by Google. It is based on Linux kernel. Android is primarily designed for mobile devices such as smart-phones, tablets, Android televisions, wrist watches. All the above mentioned devices are touch screen devices. Android uses touch inputs like swiping, tap-ping, pinching and reverse pinching on objects visible on screen along with a virtual keyboard. The Android platform supports Bluetooth data transfer. Exchange of data is done using the inbuilt Bluetooth network stack.

This stack allows two or more Bluetooth enabled devices to wirelessly exchange messages with each other. Bluetooth APIs are present for the users in order to access the Bluetooth network stack. The APIs help establish one to one connection.

Bluetooth

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz[4]) from fixed and mobile devices, and building personal area networks (PANs). Invented by telecom vendor Ericsson in 1994,[5] it was originally conceived as a wireless alternative to data cables.

Other Components:

ADK kit, 2 Mobile devices, laptop with Window OS

PROPOSED WORK

Scanning for other Bluetooth devices

This application begins searching for devices as soon as it is opened. Options menu appear only after a successful or unsuccessful search is complete.

Response made by other Bluetooth enabled device to the_request.

The other end Bluetooth enabled devices have to respond back whether they want to connect or not to first user.

Establishing connection

As the other end user agrees to communicate a connection is established.

The denial will not be able to set the communication.

Transferring data over Bluetooth

Now the user can send the message and could also retrieve the message. He/ she can also use various other features provided in the settings.

BLUETOOTHCHAT APP: A SOLUTION

Messenger applications are very much in vogue these days. Whatsapp, WeChat, etc are a rage in the app world. But all these messenger applications exploit either mobile data which is a paid service or Wi-Fi which is not always available and when available the connection strength fluctuates from place to place. Even when one wants to send a message to another person on the same floor or a few feet away they have to rely on the availability of these two. Our motive was to create a messenger that

facilitates communications in a small firm (say college or hospitals or clinics) free of cost. To accomplish this, technology that came into our minds is— Bluetooth.

This is a Bluetooth messaging app you can connect and send messages to other android devices and see Bluetooth compatible devices around you. No GSM or Wi-fi connection required, all you need is two Bluetooth compatible android devices in range of each other and you can text away.

To chat with a user, select it from the list and press ‘Ping' to send a welcome message. The other user may do the same. As the welcome message is displayed, use right or left soft key to accept or reject the chat session. Once the session is accepted, the chat starts with colourful text to differentiate users.

In the proposed system, the sending up of all the text and documents can be done via Bluetooth and it does not require internet connection. Proposed system saves a lot of time and efforts for making connections via internet as well.

Proposed system is far a lot better because in proposed system, there is no chance of losing information, data or and file or document due to losing up of internet connection.

Design of Android Bluetooth communication

This is to use the Bluetooth API provided by the Android platform to implement communication between Blue- tooth devices. Bluetooth communication is based on unique MAC. Taking into account the security issues, the Bluetooth device must been paired before using Bluetooth communication. The connected devices will be establishing a RFCOMM channel to transmit data.

Therefore, the process of Bluetooth communication starts with turning on Bluetooth enabled device and searching for another Bluetooth device.

This is depicted in Fig 1, where the app turns on Bluetooth of the device for making it visible to others. In Fig 2, the Bluetooth enabled device searches for other device that are within the range.

Fig 1: Turning on Bluetooth through app to make device visible to others

Fig 2: Searching for all the Bluetooth devices

The user has to request the Bluetooth permission in order to perform any Bluetooth communication, such as requesting a connection, accepting a connection, and transferring data.

Fig 3 Sending of messages to other connected device

Before your application can communicate over Bluetooth, you need to verify that Bluetooth is supported on the device, and if so, ensure that it is enabled.

A dialog will appear requesting user permission to enable Bluetooth. Once a connection is made with a remote device for the first time, a pairing request is automatically presented to the user. When a device is paired, the basic information about that device (such as the device name, class, and MAC address) is saved. Using the known MAC address for a remote device, a connection can be initiated with it at any time without performing discovery (assuming the device is within range).

When a device sends the message to other by entering into the text field and the pressing send , the app will send the above entered message to the other device as shown in fig 3. The other device receives the message as soon as the connection is established between the two devices. The other device also sends the message to the first one after the establishment of the connection. Bluetooth enables or provides the better improvement over the android devices. Special characters like smileys, emoticons etc could also be sent through app this is shown in fig 4.

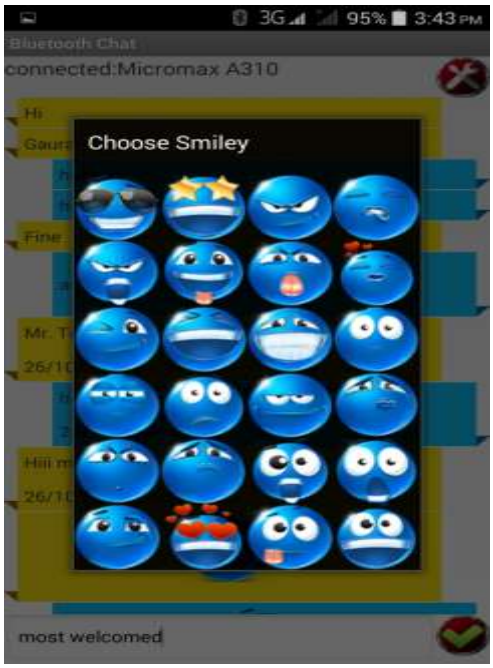

Fig 4 Inclusion of Smiley and other characters

RESULT

Images depicted above (in fig 1, fig 2, fig 3, fig 4) show functions like Searching, Sending Message, Including Emoticons , Clear message and Close App. The working software app shows that it is possible to develop an android app through which we can communicate wirelessly without establishing any external network. Also, communication can be free without paying any cost for internet.

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. From a proper analysis it is inferred that the system is working as per the objectives of the project. Installation is an easy task. It requires installing the application once and then it works on its own.

The user interface is user friendly and does not require specialized training or skills to operate it. The information section of this technical report describes the detail of this system.

FUTURE WORK

One of the major tasks where we need to work is to enhance the range to which the data can be sent.

Secondly we can also try to establish multiple connections which is not possible in Bluetooth, so this is to be achieved.

Provide security to the application by applying passwords and different security measures.

Enhance the varieties of data that can be sent eg. Inclusion of data in form of videos and audio.

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