

Ether : An Android Chat Application Based on Wi-Fi Direct

Amrita Nischal

BE Student, Dept of ISE, School of Engineering and Technology, Jain University, Ramanagara, Karnataka, India

Sayeeqa Anjum

B-Tech Student, Dept of ISE, School of Engineering and Technology, Jain University, Ramanagara, Karnataka, India

Reetanjan Manna

B-Tech Student, Dept of ISE, School of Engineering and Technology, Jain University, Ramanagara, Karnataka, India

Thejashwini .K. S

B-Tech Student, Dept of ISE, School of Engineering and Technology, Jain University, Ramanagara, Karnataka, India

Abstract:- Nowadays, most well liked social networking services adopt centralized design, during which continual net property is necessity for every user to use those services, and centralized servers square measure used for storage and process of all application/context information, even if mobile users square measure among proximity space (like field, event spot, and community), and may directly exchange media through numerous wireless technologies (e.g., Bluetooth, Wi-Fi Direct, etc.). On one hand, the wise centralized server might cause serious privacy concern, because of the very fact that it collects and stores all users' information (messages, profiles, location, relations, etc.), during this paper, our contributions square measure to develop an application. We have a tendency to propose a Wi-Fi Direct based mostly P2P social networking framework, that permits direct information exchange among users while not mistreatment infrastructure network once users square measure situated in proximity.

I. INTRODUCTION

Wi-Fi has become a alternative for brief vary communication dying of Wi-Fi networks, its large-scale implementation and handiness of Wi-Fi devices e.g. smart phones, shop per natural philosophy and business sensors. The Wi-Fi Direct is turning into a motivating and appropriate candidate for communication in many application domains together with content distribution, resource sharing, emergency communication, alert dissemination, on-line gambling, proximity based mostly advertising and social networking. Wi-Fi Direct allows Wi-Fi devices adore smart phones, laptops, smart TVs, printers, cameras associate degreed alternative appliances to inter-connect quickly and handily while not incorporating an Access purpose (AP). Wi-Fi Direct is constructed on the infrastructure mode of local area network. Wi-Fi Direct connections area unit secured with Wireless Protected Access - a pair of (WPA2). Wi-Fi Direct supports a similar high knowledge rates as in Wi-Fi (up-to 250 Mbps). The vary of Wi-Fi Direct affiliation is two hundred meters (this is theoretical vary and sensible vary can be nominal of this). The specifications additionally need 1:1 affiliation necessary for Wi-Fi Direct certified devices,

whereas keeping 1:N affiliation elective feature. The useful entity of Wi-Fi Direct design is named a "P2P Group" that's functionally corresponding to a Basic Service Set (BSS) in bequest Wi-Fi network. A P2P cluster consists of a P2P cluster Owner (P2P GO) and 0 or a lot of P2P shoppers. The P2P GO (sometimes brought up as "GO") is additionally referred to as a Soft-AP. AP functions area unit enforced among Wi-Fi P2P devices. A P2P device will dynamically take the role of associate degree AP or shopper. The roles of P2P Devices (i.e. P2P GO and P2P Client) area unit typically negotiated before making a P2P cluster and stay fastened whereas the P2P cluster is active. Figure one illustrates the various roles of P2P Devices. Device Discovery could be a necessary feature to be supported by all P2P Devices. Before type a P2P cluster, a P2P Device runs the Device Discovery procedure to observe the presence of alternative P2P Devices in its wireless vary. The procedure consists of 2 distinct phases: Scan and realize. Within the Scan part, the P2P Device performs ancient Wi-Fi scan (passive scan) through all supported channels so as to gather data concerning the encompassing devices, P2P teams and bequest Wi-Fi networks. Once the Scan part is completed, the device enters into the realize part. Within the realize part, the P2P Device alternates between 2 states: Search and Listen. within the Search state, the P2P Device sends one or a lot of Probe Request (PREQ) frames on the social channel particularly channels one, half dozen and eleven within the a pair of.4 GHz band. within the Listen state, the P2P Device dwells on one in every of the social channels (1, half dozen and 11) referred to as the Listen channel and waits for Probe Request (PREQ) frames from alternative P2P Devices. Thus, the success of the realize part is that once 2 devices come back to a typical channel to speak. it's noticeable that the P2P Device Discovery method will induce some delay to let a P2P Device discovers all P2P Devices in its section. This delay, termed as "Device Discovery delay", is often comparatively high if many P2P Devices area unit at the same time activity Device Discovery within the same wireless vary. A facet good thing about Wi-Fi Direct is that it will operate at higher speeds and bigger distances than Bluetooth; Bluetooth usually uses way less power than Wi-Fi. What is more, the quality is geared toward enterprise use yet as shopper use, with the inclusion of enterprise management options and WPA2 security.

II. EXISTING SYSTEMS

A. IPmsg for Android

Wi-Fi File Transfer - IP Messenger (IPmsg) is an app which can share messages/files/folders to other IPMSG devices (computers/tablets/smart phones) on the same local(Wi-Fi) network. You no longer need Wires to transfer your music or videos across your devices.

B. Fire Chat for Android

Fire Chat creates a mesh network using Bluetooth and peer-to-peer Wi-Fi. Fire Chat transmits messages and pictures offline between devices that are located within 200 feet of one another. Freemessaging.No signal or mobile data needed.Fire Chat works even without an Internet connection or cellular phone coverage. Use it anywhere: planes, public transportation, cruise ships, campuses, and crowded events. All you need is a few people around you who are using Fire Chat.

C. LAN Messenger

LAN Messenger is a free and open source cross-platform instant messaging application for communication over a local network. It does not require a server. A number of useful features including event notifications, file transfer and message logging are provided.Currently the platforms supported are Windows, Mac and Linux.

III. IMPLEMENTATION

A. Login/Registration Form

This is the front end of the application and is created using Android Studio. A form appears on the application once it is opened on an Android device. It asks the user to Login using an Email Id and Password. In case the user is not registered, it displays a message: "User not registered". The user can use the link for registration which is available on the Login Page. It navigates the user to the registration form which has the following: Enter Email, Password and Confirm password. The user needs to be connected to the internet for this step.

B. Database

This is the back-end of the application. An online server is created. A database is created in the server. The database technology used here is MySQL. The link between the front-end and back-end is established using PhpMyAdmin. When a user registers with the application, a table in the database gets updated with the same. When the user tries to login, the username and password are verified using the same table.

C. Connection Establishment

If the login credentials have been verified, the user is redirected to a page where there is an option to either send or receive data. Once one or more users are logged into the application within 200 meters of space they can find each other using the Wi-Fi capabilities of their respective Android devices. When a user selects send, they are sending a request

to the peers available around him/her. The other users using the application must select receive and they can select whether they accept what the other user has to send. If the "Accept" option is selected, the connection is established.

D. Data Exchange

After the connection has been successfully established, the sender can send the first message. This appears in a chat window on both the devices and the receiver can continue the conversation. Users can also send/receive emoticons while chatting and also the time the message is sent can also be seen.

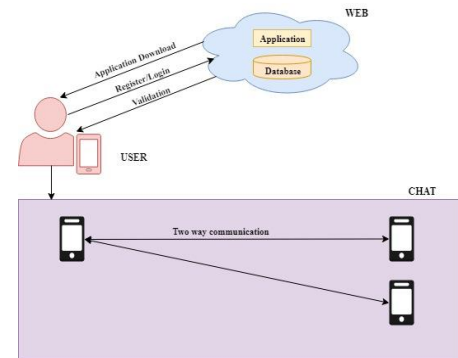


Fig 1:- System Architecture

IV. OBJECTIVES

- To provide a platform on android based devices for chatting without an internet connection or a service provider.
- Usage of the device hardware and Wi-Fi direct for connectivity.
- To establish a connection without the requirement of an Access Point.
- To provide a secure flow of data with the availability of features such as Login ids, registration and passwords.
- Faster communication and an easy means to exchange data since it's done digitally.
- To develop a secure platform for communication that can be downloaded on handy android devices.

V. REQUIREMENTS

A. Hardware used

- MacBook Pro for application development
- Remote server for the database
- Android device for running the application (Android 4.0 or later versions)

B. Software

- Database used: MySQL
- Android IDE: Android Studio 3.2
- Online Server: PhpMyAdmin
- Languages used: Php, Java

VI. RESULTS

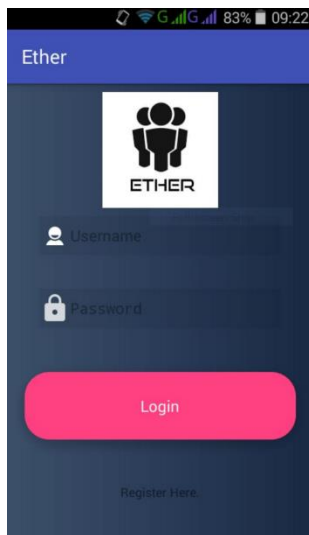


Fig 2:- Login Page



Fig 3:- Chat Window

VII. CONCLUSION

This chat application has been developed to help students, teachers, and workers to communicate with each other without any internet connection or through Wi-Fi direct. This is important in several ways like in college in office staff rooms.

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