

Peer-to-Peer Video, Audio Streaming Over Wi-Fi Network on Mobile Device.

Madhav D.Ingle¹, Pranit Bhor², Ganesh Hargude³, Samar Deshpande⁴

Assistant Professor, Dept. of Computer Engineering, JSCOE, Hadapsar, Pune, India¹

UG Student, Dept. of Computer Engineering, JSCOE, Hadapsar, Pune, India^{2,3,4}

Abstract - : *In This technological era smartphones are the basic necessity in everyone's life. Android O.S. is the most popular and fastest developing platform which is used world wide. So developing an application for an android phone is of the great use. Wifi Technology is the best technology uptill now which we are using for connecting between two devices. Wi-Fi Technology can speed up the data transfer between the connected devices. It is possible to make many applications using Wi-Fi Technology on android platforms because android is an open source platform. This makes android technology the biggest and largest platform for mobile computing. The easiest way to connect the two devices is the Wi-Fi network. Many more applications has been developed that uses this technology.*

Key Words: 2D-3D, Images, Video, depth, motion, algorithm.

1. INTRODUCTION

Mobile computing is the process of computation on the mobile device. So we can say that mobile computing allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link. So to develop the applications in the mobile computing mostly "Android" platform is used. With the use of Android we can develop applications that can run on android devices.as android is the open source platform vendors can make the change in their products according to their need. So there are many advantages of the android O.S. that we can use like Multitasking, ease of access, open source etc. Developing android application is not very costly as we can get all the required resources free on internet. Android includes the lightweight SQLite database engine, the same database used in Firefox and the Apple iPhone SQLite is a tiny yet powerful database engine created by Dr. Richard Hipp in 2000.Android Uses Dlavik virtual Machine which is a virtual machine (VM) designed and written by Dan Bornstein at Google. Your code gets compiled into machine independent

instructions called byte codes, which are then executed by the Dalvik VM on the mobile device. Although the byte code formats are a little different, Dalvik is essentially a Java virtual machine optimized for low memory requirements. It allows multiple VM instances to run at once and takes advantage of the underlying operating system (Linux) for security and process isolation. Bornstein named Dalvik after a fishing village in Iceland where some of his ancestors lived.

2. RELEATED WORK

Our basic idea is to stream the contents of one device like audio, video and image to the another device. The devices used are android devices which are having version 4.1 or higher .In our System we have connected two devices over the Wi-Fi network. Application contains modules such as Registration module, image streaming module, video streaming and chatting module. When two mobiles are connected through Wi-Fi network then one mobile will act as presenter and other will act as viewer. Presenter system will have the audio, video and image stored which will be streamed on viewer's phone. When the Presenter will click on particular option provided then the audio/video or image will be streamed to viewer's device through the network. This all process is the offline process where the internet connection is not required. If user wants to chat with each other than the presenter will click on the chat option provided in the menu. Particular device will be searched and when connected the viewer can see the messages that had been sent by presenter as well as he can send his instant reply to presenter. For the video streaming, audio streaming and for image streaming modules the required media is stored in the particular folder in phone memory. For e.g. if we want to stream the video from one device to another then the videos must be present in the "Videos" folder. Same as that for audio streaming the particular audio should be stored in the "Music" folder and for image the "DCIM" folder is used in presenter's phone memory. In this way all the media contest can be streamed over the viewer's mobile phone and can be enjoyed till the Wi-Fi connection is on.

3. LITERATURE REVIEW

The author Mihai Carabas, Lucian Mogos, anu, Razvan Deaconescu, Laura Gheorghe, Nicolae T,apus has presented an approach for providing lightweight and fast display virtualization for mobile devices this allows multiple operating systems to share the same physical display screen. They have created the prototype implementation using a dual guest android setup which uses the Para virtualization framework, this paper have advantages such as new approach to display virtualization, the ability of multiple mobile operating systems (such as Android), running on the same device, to share the display screen. It has a small codebase that may be easily ported to different mobile platforms. But it fails to explain about the lack of GPU virtualization lack of a distinct driver domain [1]. In authors have discussed about how the mobile phones have undergone the various changes. Android phone has the touchscreen capability which can be used to display and manipulate the information. Authors have discussed about sharing the mobile screen of one user to another user i.e. Screen Sharing through their paper. This topic have disadvantage like application creates a connection between two users through which they can share their mobile phone screens. The sharing of information is done at an optimal rate which ensures that the system does not get overloaded while maintaining the quality of communication .but it could not cover. No Security mechanism is explained. Higher android version expected [2]. The author KhongNeng Choong et.al have discussed about the Seamless Presentation Technique (SP) which is server-less sharing system that will work on Wi-Fi environment. Although this system will work on android only as the future work can be to implement it on various O.S. Platforms. The advantages of this paper are as follows. SP was designed and implemented purely as software solution to support multi-delivery models. SP uses application agnostic approach to capture, encode and transmit desktop screen across the wireless network to the corresponding SP receiving application. But this paper could not cover topics like SP runs only on Windows platform while Display Cast runs on both Mac and Windows. Not investigated on stream based on both computing and communication resources in the context, thereby delivering a smarter mirroring system. [3]. On demand video streaming services are available in market now days. The authors have extended their previous work on MOVi(Mobile Opportunistic Video-on-demand) and they have proposed an improve scheduling algorithm which incorporates H-hop blocking and opportunistic download skipping schemes. Wi-Fi direct technology which allows direct device to device

communication [4]. Daniel Camps-mur et.al have discussed the overview of the technical features of Wi-Fi direct technology. They have analyzed various features of the Wi-Fi direct through there experimentation that quantifies group formation delays in real life scenarios. They have well explained about Wi-Fi Direct devices are required to implement Wi-Fi Protected Setup (WPS) to support a secure connection with minimal user intervention. In particular, WPS allows establishing a secure connection by, e.g., introducing a PIN in the P2P Client, or pushing a button in the two P2P Devices. In order to support energy savings for the AP, Wi-Fi Direct defines two new power saving mechanisms: the Opportunistic Power Save protocol and the Notice of Absence (NoA) protocol. But this paper carry disadvantages such as In order to foster vendor differentiation, the Wi-Fi Direct specification does not define any mechanism to compute the CTWindow in the Opportunistic Power Save protocol or the schedule of absence periods in the Notice of Absence protocol [5]. Using a Smartphone such as android there is always a risk of leakage of data and privacy assessment. Author Nai-Wei Lo, Kuo-Hui Yeh, and Chuan-Yen Fan has presented a user privacy analysis framework. LRPdroid has been proposed for an Android platform to offer a user privacy management model. In LRPdroid framework they have defined various models to achieve user privacy management. This paper has advantages like 1. a user privacy analysis framework called LRPdroid has been proposed for an Android platform to offer a user privacy management model. A system prototype based on the LRPdroid framework was developed to evaluate the feasibility and practicability of LRPdroid.but it could not explain about developing privacy protection solutions on top of the LRPdroid framework is also an interesting research topic since the current model only supports privacy violation prediction and detection [6]. Authors Daniel Camps-Mur, Xavier Pérez-Costa, Sebastià Sallent-Ribes they have analyzed the power saving protocol used in Wi-Fi direct technology and then they have defined two algorithms to efficiently use them: Adaptive Single Presence Period (ASPP) and Adaptive Multiple Presence Periods (AMPP) which are evaluated by OPNET solutions [7].

4. PROPOSED SYSTEM

4.1 Advantages of proposed System

- 1) Provides facility of streaming audio/video from one device to another without internet connection.
- 2) It also has the facility of image streaming and chatting with the devices connected.

- 3) With help of android connection between two devices can be created very easily.
- 4) No change in video resolution or audio quality while streaming.

4.2 Architecture

1) Presenter System Architecture

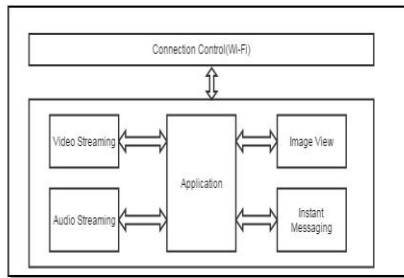


Fig -1: Presenter System Architecture

Presenter system can also be called as the server system. In this system the video, audio and image that is to be streamed are present. The required media is stored in specific folder so that it's become easy to search the media at time of streaming. Then the required option is selected and the operation is performed.

2) Viewer System Architecture

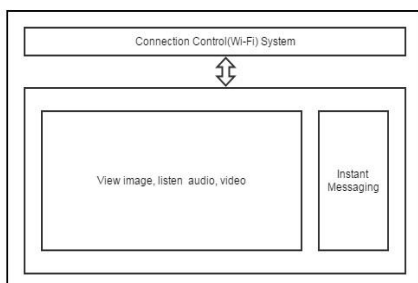


Fig -2: Viewer System Architecture

The viewer system can also be called as the client system. Here the media which is present in presenter system can be streamed through Wi-Fi network on these device. So here there is no need of media to be stored. After connection of both the devices the video or audio or image whichever option is selected by the presenter that will be played on the viewer's mobile phone directly.

5. ALGORITHM USED

These are the steps for connection of two android mobile phones over Wi-Fi network.

1) Set Up Application Permissions

- In order to use Wi-Fi P2P, add the CHANGE_WIFI_STATE, ACCESS

WIFI_STATE and INTERNET permission in manifest file.

- android:name="android.permission.ACCESS_WIFI_STATE"/>
- android:name="android.permission.CHANGE_WIFI_STATE"/>
- android:name="android.permission.INTERNET"/>

2) Set Up a Broadcast Receiver and Peer-to-Peer Manager

- To use Wi-Fi P2P, you need to listen for broadcast intents that tell when certain events have occurred. Instantiate an IntentFilter and set it to listen for the following:
- Indicates a change in the Wi-Fi P2P status.

```
intentFilter.addAction(WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION);
```

- Indicates a change in the list of available peers.

```
intentFilter.addAction(WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION);
```

- Indicates the state of Wi-Fi P2P connectivity has changed.

```
intentFilter.addAction(WifiP2pManager.WIFI_P2P_CONNECTION_CHANGED_ACTION);
```

- Indicates this device's details have changed.

```
intentFilter.addAction(WifiP2pManager.WIFI_P2P_THIS_DEVICE_CHANGED_ACTION);
```

4) Initiate Peer Discovery

- To start searching for nearby devices with Wi-Fi P2P, call discoverPeers()

5) Fetch the List of Peers.

- First implement the WifiP2pManager.PeerListListener interface, which provides information about the peers that Wi-Fi P2P has detected.

6) Connect to a Peer

- In order to connect to a peer, create a new WifiP2pConfig object, and copy data into it from the WifiP2pDevice

representing the device you want to connect to. Then call the connect().

6. RESULT ANALYSIS

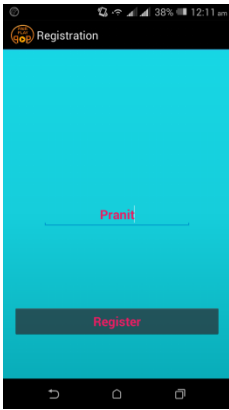


Fig -3: Registration Module

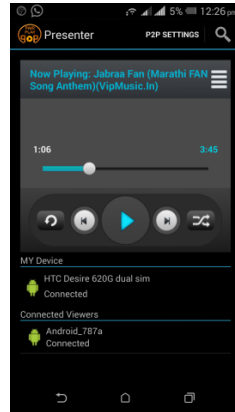


Fig -4: Audio Streaming

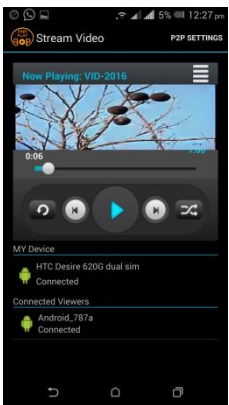


Fig -5: Video Streaming



Fig -6: Connection Window

- i. Registration module is used to register the user when he first install the application. There is importance to know the name of the user when we do messaging from this application.
- ii. Audio streaming module is used to stream the audio from one device to another.
- iii. Video streaming is used to stream the video from presenter system to the viewer system.
- iv. Connection module is used to connect the two android capable devices with each other through the Wi-Fi network.

7. GRAPHICAL ANALYSIS OF RESULT

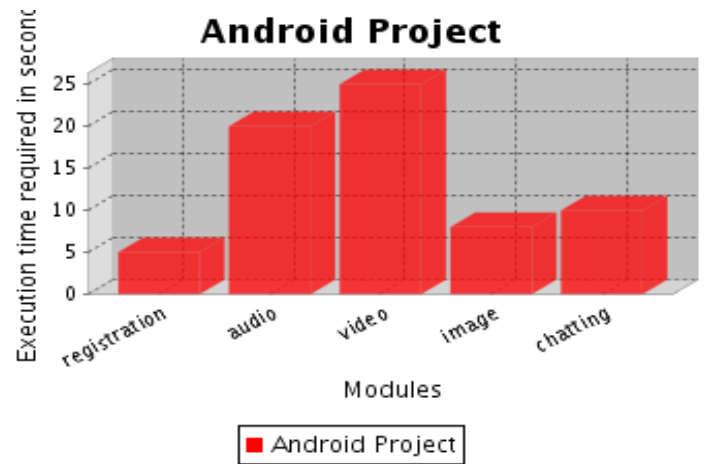


Chart -1: Graphical Analysis of project

8. CONCLUSIONS

In this paper we have discussed about the mobile computing and android as a platform for mobile computing. Also we have stated points about our proposed system and its advantages and we have discussed the architecture of the system and how it helps the users to get connected with WiFi network to stream the contents of our mobile phones.

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