

# Android Based PC Controller

**Prof. Preetee K. Karmore**

Assistant Professor, Department of Computer Science and Engineering, Dr. Babasaheb Ambedkar College of Engineering and Research, Nagpur, Maharashtra, India

## ABSTRACT

Conventionally, the computer system has a monitor, CPU, keyboard, and mouse. For performing some activity on the computer such as typing a word document, opening some file or doing any operation on a computer, we need to sit in front of a computer with hardware devices such as keyboard and mouse. Also, if we are giving any presentation in the conference and if the presenter standing at some place away from keyboard and mouse and wants to open some other file then he has to come in front and then open other file using a mouse. Moreover, sitting in front of a computer for hours, one suffers from eye problems as well as other health issues. So, to overcome these problems an android app is developed. . Using this app user can control the PC within the Wi-Fi range. Wi-Fi connection is required between computer and android device so that user can access the computer remotely instead of sitting beside it.

**Keywords :** Wireless keyboard, Wireless mouse, WIFI Connection, Android device

## I. INTRODUCTION

There exist several situations where we want to wirelessly and comfortably operate a computer, where the computer screen is projected onto a big screen through a projector or big-screen television, such as classrooms, conference/meeting rooms, mobile, workgroup project environments and modern office environments, and even living rooms. Several specifically designed devices are available in the market for the purpose of operating computers remotely and wirelessly. Wireless keyboard, uses either Bluetooth or wireless USB mini-receiver plugged into the USB port of computer for the communication between the keyboard and the computer. Some wireless keyboards have a touchpad for controlling the mouse cursor. Wireless presentation controller, allows user to operate his/her computer remotely for presentation through Bluetooth connection.

However, all those devices have certain drawbacks. Wireless keyboard has limited flexibility and is not convenient for a presenter to carry it around in the room during the presentation. Presenters usually like to walk around while presenting. Carrying a wireless keyboard is definitely not convenient. Wireless presentation controller does have good mobility. However, most of such devices do not allow user to have full operation on the computer, such as running a program, moving or closing an application window, etc. Even it has a small touchpad for moving mouse cursor, however it is very difficult for the presenter to use it to move the mouse cursor while he/she is walking around. The widely used and very popular smart devices, such as iPads, smart phones, PDAs, and smart game controllers, can be the excellent alternatives as computer remote controllers if we develop appropriate apps for them. This motivated to develop an app for most popular mobile OS android to control action on PC.

The traditional computer system has a wired keyboard and mouse. It becomes difficult to access the system remotely. So to overcome this problem we have designed an android app that allows to control the PC remotely within the Wi-Fi range by providing virtual mouse, keyboard. It also provide function to send and receive data from phone and laptop, to transfer android files to desktop and vice versa, to play media player on laptop and to view gallery controlled by android and to implement live screen.

### I. Implementation details

**Proposed work is divided into three parts-**

1. Android(Client Side): Android part of proposed work has been developed in Android Studio.
2. Desktop(Server Side): Desktop part of proposed work has been developed in Netbeans.
3. Libraries: Library (jar file) used by both android as well as desktop part. It has been developed in Netbeans.

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TCP two way handshaking has been used for establishing a connection. As TCP provides connection oriented, reliable and secured service and provides acknowledgement of delivered packets. First client port send a request to the server port for connection. Server port receives request from client means server is in listening mode and the flag means that the connection is opened. Connection is identified by 4 values IP of your host, port of your host, IP of the remote host, port of the remote host. At this moment, where the 3 way handshake is done, the first program gets the client socket from the server socket is returned. As soon as you get connected to the remote program, the remote program gets the client socket just like your local program through which all communication is done.

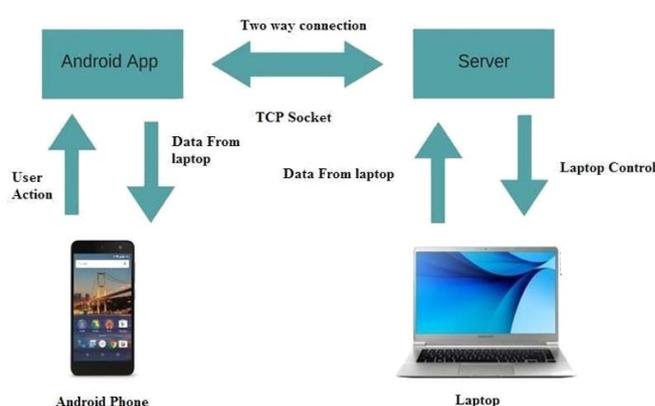


Fig 1 : Working Model of Wireless Controller using Android

### 1. How to Connect

- A. Start hotspot on phone and connect your laptop via Wi-Fi.
- B. Open the desktop app on your laptop.
- C. Open Android app and enter connection details provided by desktop app to connect.

### 2. App Dependencies

- A. User must have JRE 8 installed
- B. Only Android mobiles are supported
- C. Working Wi-Fi/hotspot is necessary

## II. MODULES

### 1. Server side

Firstly, connect laptop to a common network through hotspot. Run the desktop application. After running the desktop application IP address and port number will be generated which will be used to establish connection between android mobile and desktop. The IP address is generated dynamically by using Dynamic Host Configuration Protocol (DHCP). The port number is basically defined as 3000 port number and if the port number 3000 is not available then it will go on incrementing the port number till it finds the free port. We have incremented the port and not decremented because the port number 0-1024 are used for standard services such as HTTP. For this we have first opened the server socket. While implementing a server we also need to create a socket

object from the ServerSocket in order to listen for and accept connections from clients(android phone).

## 2. Client side

For establishing the connection we need to use the protocol such as TCP or UDP. In proposed work we have used TCP. TCP is a connection-oriented protocol. In order to do communication over the TCP protocol, a connection must first be established between the pair of sockets. While one of the sockets listens for a connection request (server), the other asks for a connection (client). Once two sockets have been connected, they can be used to transmit data in both (or either one of the) directions. First, we have open a socket.

## 3. Touchpad and Keyboard

Touchpad and Keyboard will perform their normal task. For implementing the virtual mouse and QWERTY keyboard we have used Robot class in JAVA. Robot class contain methods such as mousePress( ), mouseRelease( ), doubleClick( ), mouseMove( ), keyPress( ), keyRelease( ).

## 4. File Transfer

We can share the file on mobile to laptop. The file will be stored in C:\Users\Admin\RemoteControlPC For implementing this we have created a receiveFile function which has file name, file size and the object of the ouputInputStream class. Object of the outputInputStream class because the file is to transferred from client to server .i.e. server is in listening mode. It first fetch the home directory using the function getHomeDirectoryPath( ) which returns the path of the file which is to be transferred from mobile to laptop. The file is transferred in the form of packets using TCP. The file is saved at the above specified path.

## 5. File Download

We can download the files from the host computer to our android mobile. For implementing this we have created a sendFile function which has path and the object of the outputStream class. Path is the location where the file is to stored and Object of the DataOutput Stream class because the file is to transferred from server to client. Then it sends the size of the file first and then file is transferred in the form of packets using TCP.

## 6. Image Viewer

We can view the images of our mobile on the laptop. For implemeting this we have used Image View node that is used for painting images loaded with Image class. We have created a showImage method which has name and path as a parameter.

## 7. Media Player

The mobile songs can be played on laptop. It will shown the list of item of your mobile phone. You can send the file by clicking on it.Music control which shows the progree of song and same with that we provide the functionality for volume, increasing and decreasing as per user requirement and providing one pause button for pause the song and resume the song.

## 8. Power

Power provides many options such as shut down, restart, suspend and sleep. For implementing this we have used exec( ) method of JAVA Runtime class. Firstly, we get the name of the operating system by using the getProperty( ) function of JAVA. This function returns the name of the OS.

## 9. Live Screen

The monitor screen can be seen in android phone. It shows the running screen in android phone. We can access and perform any operation by just using android phone. For implementing this we have used the Robot class in Java. Robot class has method such as createScreenCapture which creates an image containing pixel read from the screen. In simple

words, this function returns the screenshot of every instance. This screenshot is send in the form of packets using TCP. In this way we get the live screen. For adjusting it to the size of mobile window we have used the `getScreenSize()` of the Toolkit class in Java.

### III. RESULT AND DISCUSSION

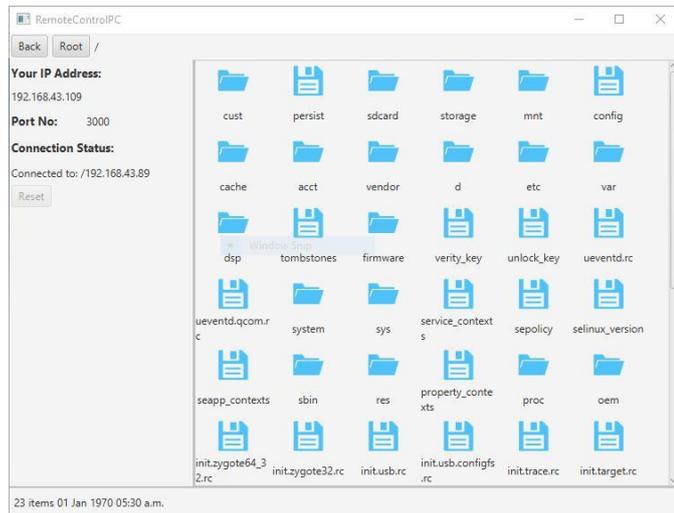


Fig 4.1 Server Side Running on Desktop

The figure 4.1 shows the server side window running on the desktop which will show the IP address of the PC and the port number. This IP address and port number will be used for establishing the connection between the android phone and the desktop.

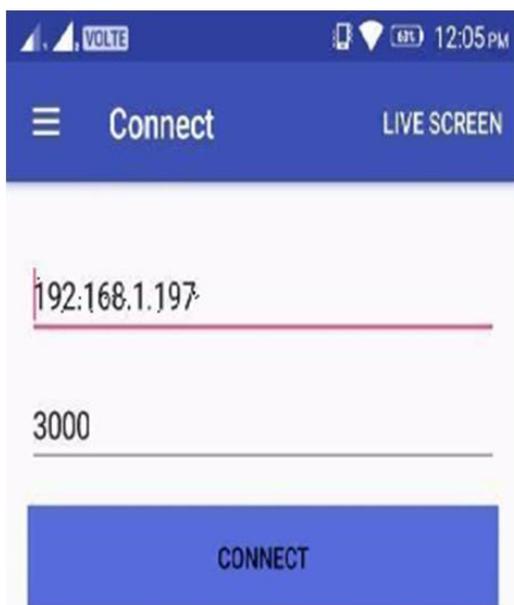


Fig 4.2. Connect Screen On android

The fig 4.2. shows the Connect screen on android. Here, we have to enter the IP address and the port number generated by the PC. After entering the correct IP address and the port number the connection will be established between the PC and the android mobile.

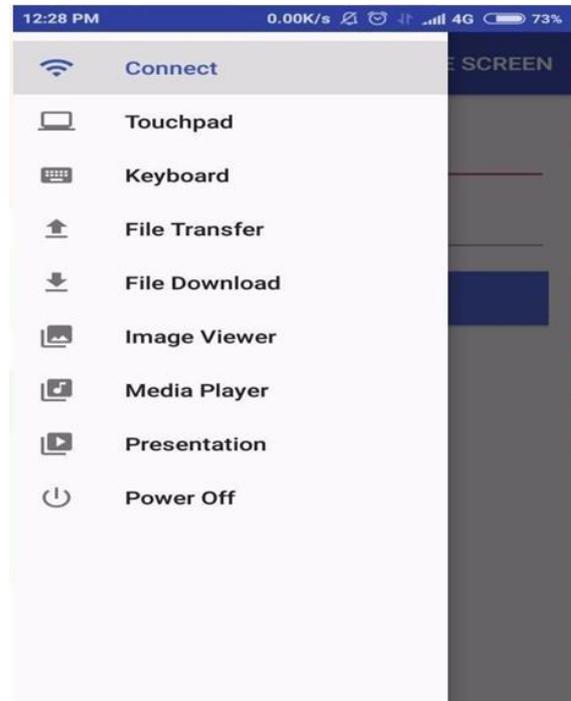


Fig 4.3. Navigation(Android)

The figure 4.3 shows the list of various options provided in app.



Fig 4.4. touchpad to control mouse

Touchpad acts like a virtual mouse. The cursor will be moved by dragging the fingers on the screen. The double click is implemented as two left clicks.



Fig 4.5. Keyboard Screen

The fig 4.5 is of virtual keyboard which contains the QWERTY keyboard and buttons such as Control, Alter, Tab etc.

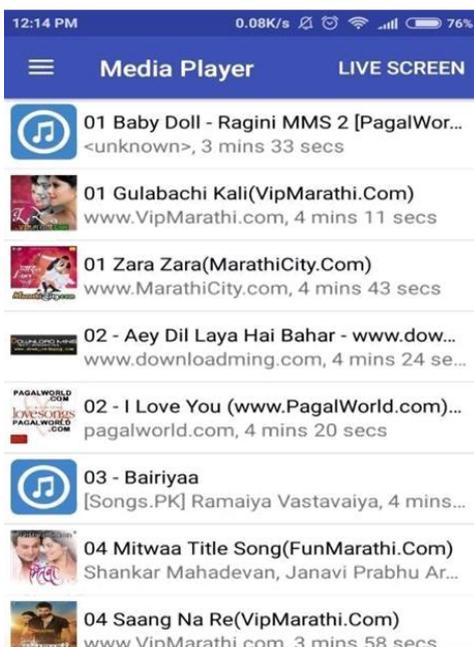


Fig 4.6. Media Player Screen

Interacting mobile phone and laptop, when you want to play the music, it shows the list of music of your phone. By just clicking on it, it directly sends that song to the server (laptop) and play that particular music.

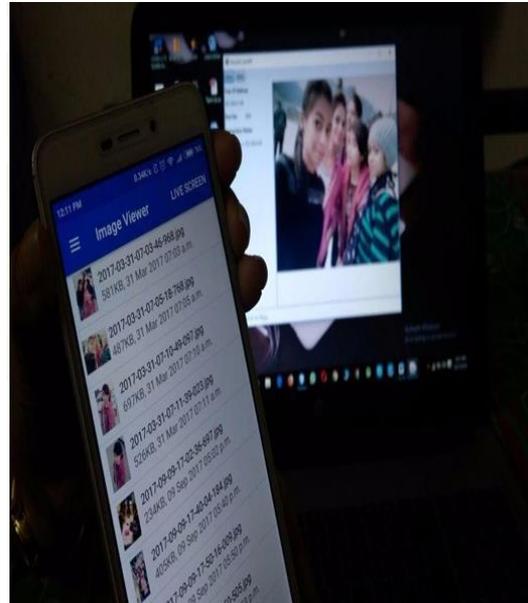


Fig 4.7. Image Viewer Screen

Using the Image Viewer, the user will be able to see the images which are in mobile on the laptop.

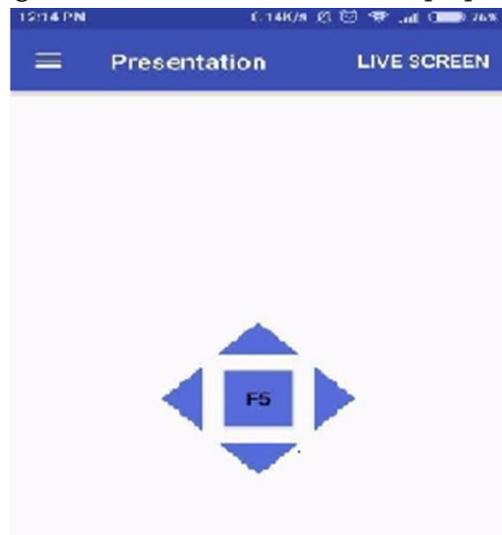


Fig 4.8. Presentation Control

Using Presentation control, the user can move slides using the arrow keys provided and F5 is for slide show.

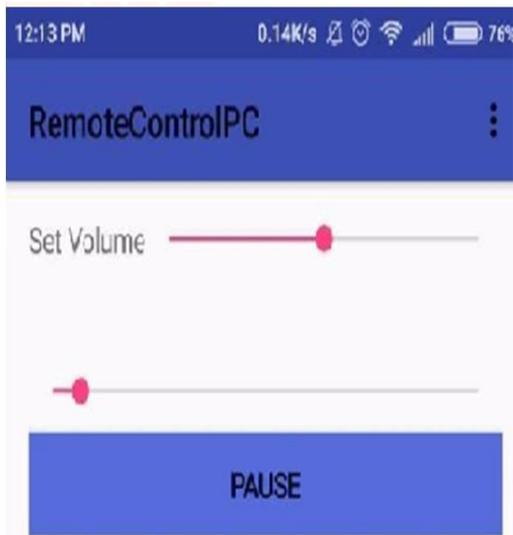


Fig 4.9. Music control screen

With the media player you can see music control screen, where it provides set volume, which is used to increase or decrease the volume, next is progress of song, and the third is pause button to stop the song or we can resume the song from the same button.

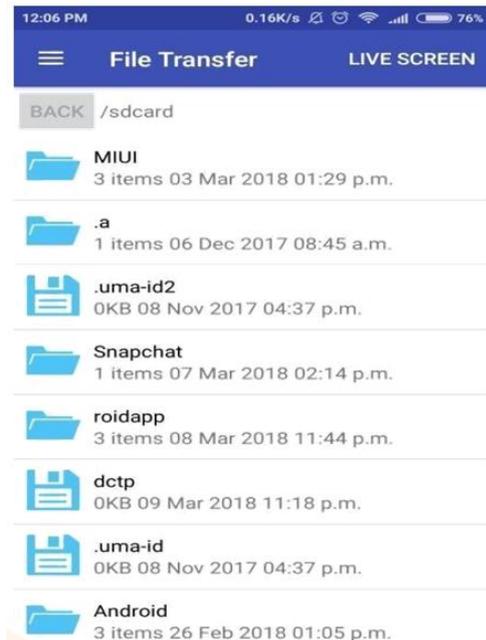


Fig 4.10. File Transfer Screen

Using File Transfer, the user can transfer the files from mobile to PC.

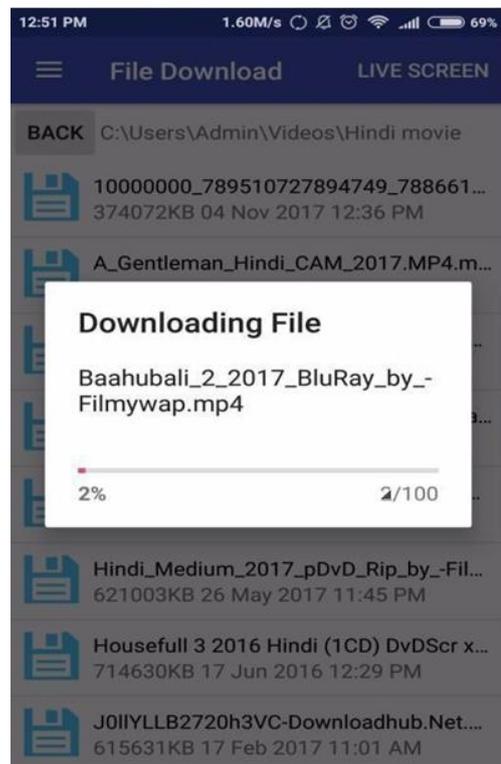


Fig 4.11. File download screen

Using File Download, The User Can Download The Files From PC Onto Android Mobile. User Can Download The File Of Any Format.

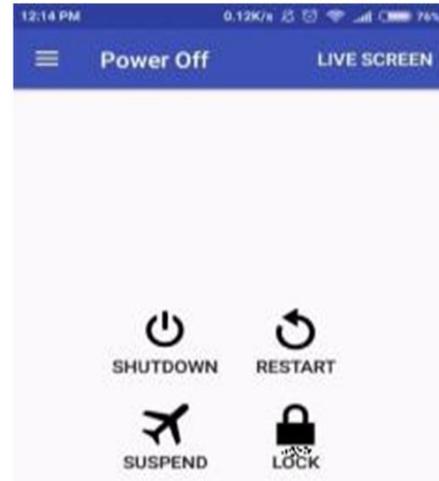


Fig 4.12. Power off Screen

Power off screen contains control such as Shutdown clicking on which will shut down the PC. Similarly, Restart, suspend and lock options are provided.

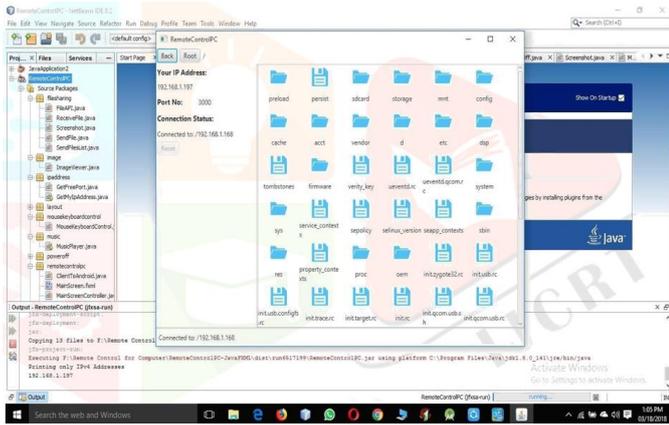


Fig 4.13. Live Screen

Live screen is used to bring the server screen to the mobile for that we are using GetScreenCapture(). It uses the scaling factor for managing the image screen to small screen. By using the live screen we can directly use the file, folders and perform the operation directly.

#### IV. CONCLUSION

This report describes how to turn smart devices, more specifically smartphones, into computer remote controllers. As we know our traditional computer system are not easy to handle. If we want do any work on computer then, we need to carry the hardware all time. But using this app we provide the functionality where user can easily handle the system from remote place and can perform several operation by connecting to Wi-Fi without any barrier. It provide flexibility to control the PC remotely through this app. For that we have provided the touchpad which is a replacement of mouse and control the pointer . QWERTY keyboard is provided. File transfer and file downloading the file from android phone and laptop respectively. Using media player we can directly send the music file to the system and the music is played on the system. Along with that we have provided presentation and poweroff, where presentation handles the presentation and poweroff for shut down, suspend, lock and restart functions are provided. And the main advantage is that using this app, we can bring running screen to our android phone using

GetScreenCapture() function. So, with the help of live screen we can directly see all the files and folders directly on our phone and can easily handle.

#### V. REFERENCES

- [1]. Suhashini Chaurasia, "Implementation of Remote Desktop Utility Using TeamViewer", IOSR Journal of Computer Engineering(IOSR-JCE), 2016.
- [2]. Dejan Chandra Gope, Md. Shafiqul Islam, "Interaction with Large Screen Display using Fingertip & Virtual Touch Screen", 1st International Conference on Computer & Information Engineering, 26-27 November, 2015
- [3]. Onkar Mule, Nihal Shaikh, Pratik Shinde, Amit Wagaskar, Prof. Sneha Ramteke, "Remote Access of Android Smart Phone", International Journal of Computer Science and Information Technologies, Vol. 7 (2) , 2016.
- [4]. Seung-Ju Jang, "Implementation of Remote Control and Management System in the Windows OS", IJCSNS, vol.12 No. 8, August 2012.
- [5]. Alexander Henzen, Percy Nohama, "Adaptable Virtual Keyboard and Mouse for People", IJCTT, July 2014.
- [6]. C.R. Dikovita#1, D.P. Abeysooriya, "Interaction with Large Screen Display using Fingertip & Virtual Touch Screen", 1st International Conference on Computer & Information Engineering, 26-27 November, 2015
- [7]. Miss. Mukta N. Patil, Mr. Sameer S. Joshi, Mr. S. M. Bagle, "Controlling PC Through mobile phone", International Journal of Engineering Sciences& Research Technology, April, 2015
- [8]. Mahesh Deshmukh, Damini Jawale, Shruti Joshi, Prof. P. S. Kulkarni, "Android Based Wireless PC Controller", International Journal of Computer Science and Information Technologies, Vol. 6 (1),2015.

- [9]. Alifiya Bhanpurawala , Dhananjay Kalbande , Aishwarya Venkatesh, Subhashree Chowdhury , “Screen Sharing Application for Mobile Phones”, International Conference on Technologies for Sustainable Development, February 2015.
- [10]. Jeel J Patel, “IP-Based Connection Between Mobile Phones”, International Conference on Computer Communication and Informatics (ICCCI -2014), Jan. 03 – 05, 2014.