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# Mirroring of Source and Sink Devices in Android Screen Casting

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**Abstract -** *In this paper, we propose a PC/Laptop application remote system via android based mobile devices. Recently, mobile devices are used to remotely access systems such as home automation systems. However, users face trouble while using remote control systems because existing remote control systems require particular devices and software. Thus, in this paper, we propose a PC/Laptop application remote system that doesn't rely on particular devices and software by using the Wi-Fi connections of mobile phones and the PC/Laptop.*

***Key Words*: Mobile phone, Android, PC/Laptop, Remote control.**

## 1. INTRODUCTION

Android is a mobile primarily based OS system developed by Google, supported the UNIX system kernel and designed primarily for touchscreen mobile devices like smartphones and tablets. Android's malicious program is largely supports direct manipulation, mistreatment bit gestures that loosely correspond to real-world actions, like swiping, sound and pinching, to regulate on-screen objects, alongside they need additional developed mechanical man primarily based televisions, mechanical man motorcar for cars, and lots of additional applications, every with a specialised package. Variants of Androids square measure used on notebooks, game consoles, digital cameras, and alternative electronics.

A socket is that the mechanism that the majority popular operating systems provide to present programs access to the network. It allows messages to be transferred and received between applications on different networked machines. The sockets mechanism has been created to be independent of any specific form of network IP, however, is far and away the foremost dominant network and also the preferred use of sockets.

Remote Control PC/Laptop uses TCP Socket to control PC/Laptop using Android Phone. It consists of two elements. - an android application running on mobile devices and a desktop application running on PC/Laptop. User performs any action on phone. This data goes to server i.e. desktop app and some action is triggered on PC. We have implemented Java technology in this project.

There exist several situations where we wish to wirelessly and comfortably operate a PC/Laptop, where the PC/Laptop screen is projected onto a Larger screen through a projector or big-screen TV, such as lecture rooms, conference/meeting rooms, mobile, workgroup project environments and modern office environments, and even living rooms. Several specifically designed devices are available for the aim of operating PC/Laptops remotely and wirelessly. Wireless keyboard, uses either Bluetooth or wireless devices plugged into the USB port of computer for the communication between the keyboard and the PC/Laptop. Some wireless keyboards have a touchpad for controlling /regulating the mouse cursor. Wireless presentation controller, allows user work on his/her PC/Laptop remotely for PowerPoint presentation through Bluetooth connection.

## 2. LITERATURE REVIEW

In Literature review, we discuss about the various aspects of the project by taking reference of the existing projects that are similar to the makers of this current project.

Yonggao Yang and Lin Li [1] have discussed and present a way to turn smartphones into computer remote controllers. The remaining of this text is organized as follows. Section 2 describes and presents the system design that turns a smartphone into a computer remote controller. Section 3 discusses the system implementation, more clearly the software implementation. In section 4, we outline the applying of such a system. Section 5 concludes this work.

Rubinder Singh, Nitin Kumar and Bisret Narula [2] have introduces a system by which a computer will be controlled wirelessly through an android device. The aim is to rework a Smartphone into a foreign controller for the PC. Almost everything on the pc may well be controlled through phone from keyboard to mouse to specific applications like PowerPoint, Media Players or maybe it will be used for virtual gaming moreover. To send wireless signals Wi-Fi or Bluetooth may well be used which is already within the Smartphone. This paper also represents a prototype application with a protocol and a few algorithms to point out how the system will be implemented.

Elliotte Rusty Harold [3] have provided complete working programs let's say the methods and classes he describes.

This thoroughly revised fourth edition covers REST, SPDY, asynchronous I/O, and plenty of other recent technologies. Limi Kalita [4] have introduced sockets, its deployment regarding network programming. Sockets play a significant role in client-server applications. The client and server can communicate with one another by writing to or reading from these sockets. They were invented in Berkeley as a part of the BSD flavor of UNIX operating systems. Which they spread like wildfire with the web. This paper introduces elements of network programming and ideas involved in creating network applications using sockets. one in every of the foremost basic schedule tasks likely to be faced as a java programmer is performing the socket functions/methods because java has been preferred mostly for establishing client-server communications using sockets.

Seung-Ju Jang [5] has discussed the subject of next-generation IT technologies. In keeping with the advance of those IT technologies, software technology pursues convenience using mobile phones. Automatic data processing system security and control is one in each of the fundamental needs of mankind from the period. But today it's to be updated with the rapidly changing technology to make sure vast coverage, device, reliability, and real-time operation.

Suhashini Chaurasia [6] has introduced Remote desktop controlling provides remote hold up, remote access and online meeting software that the people rely on. Over quite than billion installations users are using this technology. Twenty million plus devices can be online at any time using this kind of system. This technique makes use of Virtual Network Computing VNC. VNC is platform-independent. VNC could be a viewer on any operating system and can usually hook up with a VNC server on any other OS. There's a server in Java that will be wont to communicate with any OS.

## 3. PROBLEM DEFINATION

To smoothly control mouse cursor and keyboard activities on laptop/pc using android devices. To transmit and receive data from mobile phone and PC/laptop. To transfer android data to desktop as well as to download PC/Laptop files to android devices. To play media player on music player and to view gallery controlled by android. To control presentation on Laptop/PC and to enable shutdown of computer from android.

## 4. SYSTEM ARCHITECTURE

An android phone usually has built-in wireless network function (Wi-Fi) that permits it to link with the Internet through the wireless access point (WAP). This Wi-Fi capability also allows android phones to connect to another smart device through peer-to-peer Ad Hoc wireless connection or Wi-Fi access point. Using android phone Wi-Fi feature and developing suitable software, we can turn an android phone into a PC/Laptop remote controller and use it to control the computer wirelessly. The smartphone application, running on android phones captures user's keyboard and mouse events, and sends them to PC/laptops in real-time through wireless Ad Hoc or Wi-Fi access point network

The desktop application running on the PC/Laptop accepts keyboard and mouse events from the android phones, and through the operating system running on the PC/Laptops to simulate the keyboard and/or mouse events to command the PC/Laptop, including program execution, keyboard input, and mouse actions. Those keyboard/mouse events received from android devices are simulated in such a way that they appear to be generated by the local physical keyboard and mouse belonging to the PC/Laptops.

The keyboard/mouse events from different mobile devices carry different smartphones IDs, and the PC/Laptops uses this ID information to decide whether or not it should copy the obtained events based on the configuration at PC side.

For example, if the Desktop software is configured to allow various android device to operate the computer simultaneously, then the keyboard/mouse events received from all the mobile phones will be simulated through the computer OS. Or else the events from a specific device that possesses the control right will be sent to the OS that operate the PC/Laptop. Under this example, a mechanism is applied to keep a note of computer control right and manage this right transference among the multiple smartphones.

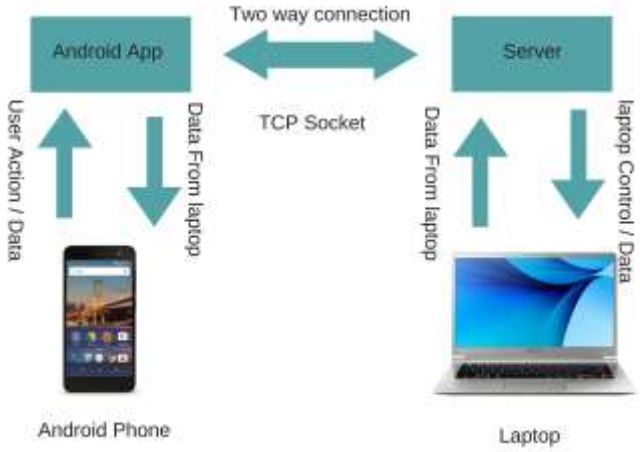


**Fig 1:** System Architecture

## 5. IMPLEMENTATION OF THE SYSTEM

Here we will discuss about how we implemented our system and is partially represented as:

The complete project is characterized into three parts-

A. SHY Remote-Android: Android segment of the project, which is developed in Eclipse.

B. RemoteControlPC-Desktop: Desktop segment of the project which is developed in NetBeans.

C. RemoteControlPC-Libraries: Library (jar file) used by both android as well as desktop part. It is developed in NetBeans.

A socket is an abstraction that we use to contact to something across the network. In Java, to send data via the socket, we get an Output Stream from it, and write to the Output Stream. To read information from the socket, we get Input Stream, and read input from this second stream. In our case, the server has another socket and another pair of streams. It uses it for Input Stream to read from the network, and use it as Output Stream to write the same data back across the network to our client, which reads it again via its Input Stream completing the round trip.

## 5.1 Software and Tools used

### 5.1.1 NetBeans IDE

NetBeans could be a software development platform written in Java. The Platform permits applications to be designed from a group of modular software components called modules. Applications supported the NetBeans Platform, including the NetBeans, is a unified development environment, and is extended by third-party developers. The NetBeans planned for development in Java but also supports other languages, particularly PHP, C/C++, and HTML5. NetBeans is cross-platform and runs on Windows, Mac OS X, Linux, Solaris, and other platforms suites a compatible JVM. The NetBeans Team actively supports the merchandise and look out for feature suggestions from the broader community. Every release is lead up by time for Community testing and feedback.

### 5.1.2 Core Java

Java may be a collection of software and specifications developed by Sun Microsystems, which was later obtained by the Oracle Corporation, which gives a system for developing application software and establishing it during a very cross-platform computing environment. Java is used during a very big choice of computing platforms from embedded devices and android devices to enterprise servers and supercomputers. While they're less common than standalone Java applications, Java applets run in secure, sandboxed environments to provide many features of domestic applications and may be implanted in HTML pages

### 5.1.3 JavaFX

JavaFX may be a software platform for fabricates and commend desktop applications, yet as rich internet applications (RIAs) which will see a large style of devices. JavaFX is meant to interchange Swing because the standard GUI library for Java SE, but both are going to be included for the foreseeable future. JavaFX has reinforced for desktop and web browsers on Microsoft Windows, Linux, and Mac OS X. Before version 2.0 of JavaFX, developers used a statically typed, declarative language called JavaFX Script to create JavaFX applications. Because JavaFX Script was compiled to Java bytecode, computer specialists could also use Java code instead. JavaFX applications could run on any desktop that would run Java SE, on any browser that would run Java EE, or on any mobile that would run Java ME.

### 5.1.4 Android

Android could be a software package stack for mobile devices that features associate software system, middleware and key applications. Robot could be a software package platform and software system for mobile devices supported the UNIX software system and developed by Google and also the Open telephone set Alliance. It permits developers to put in writing managed code during a Java-like language that utilizes Google-developed Java libraries, however doesn't support programs developed in native code.

The unveiling of the robot platform on five November 2007 was declared with the innovation of the Open telephone set Alliance, a pool of thirty four hardware, software package and telecommunication firms dedicated to advancing open standards for mobile devices. Once discharged in 2008, most of the robot platform are created obtainable beneath the Apache free-software and ASCII text file license

### 5.1.5 Java Swing

Swing could be a graphical user interface contrivance toolkit for Java. It's a part of Oracle's Java Foundation categories (JFC) – Associate in Nursing API for providing a graphical interface (GUI) for Java programs. Swing was developed to supply an additional subtle set of graphical user interface parts than the sooner Abstract Window Toolkit (AWT). Swing provides a native look and feel that emulates the design and feel of many platforms, and conjointly supports a pluggable look and feel that enables applications to possess a glance and feel unrelated to the underlying platform. Its additional powerful and versatile parts than AWT. Additionally to acquainted parts like buttons, check boxes and labels, Swing provides many advanced parts like tabbed panel, scroll panes, trees, tables, and lists. Unlike AWT parts, Swing parts don't seem to be enforced by platform-specific code. Instead, square

measure they're} written entirely in Java and so are platform-independent. The term "lightweight" is employed to explain such part.

## 6. RESULTS

After the procedure and using the following software tools we developed an android application that helps us to connect PC/laptop with the android device. It provides us remote access to the laptop/PC, it allows us to use mobile device as a touchpad controller and keyboard for accessing the data from laptop/PC in our android phones. This project have

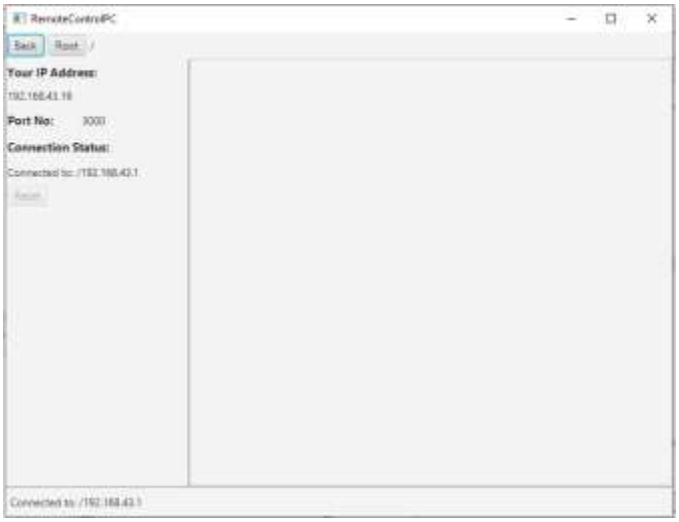


**Fig 2:** Server running on Desktop


**Fig 3:** Connect Screen
**Fig 4:** Navigation (Android) on Android


**Fig 5:** Live Screen on Android Device

## 7. CONCLUSION

In the domain we describe a way of converting smart devices, more specifically smartphones, into computer remote controllers. The system presented above may be widely used in lecture rooms and meeting/conference rooms for presentation and interactive discussion. Currently we are exploring various new approaches of using smart devices as controllers or operators for other devices. We are exploring possibilities of developing app for desktop which can control mobile functionalities and apps e.g calling, texting from desktop app.

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