

# Using Smartphone as an Intelligent Pc Controller

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## Abstract

*In this project we aim at developing a software application & mobile application which allows control/operate Laptop/PC through Smart Phone. Also it allows user to play games on their laptop/PC through Smart Phone. The main aim of this project is to fully utilize the features of Smart Phone. In this paper, the phone is used as the games controller for multiplayer games shown on external displays and, in particular, large public screens. Using a large screen offers a number of benefits: it frees the games developer from constraints of the limited graphics capabilities of the mobile screen, enables a greater amount of movement to the participating players, provides a rich social atmosphere and affords an opportunity for rich social interaction in a variety of urban landscapes.*

## 1. Introduction

Our project will allow the user to control games on laptop via Smartphone using wireless technology like Wi-Fi. It is a very well known fact that for gaming fanatics, ergonomic controls is the need of the hour. Instead of wasting money in buying new (comparatively expensive than ordinary controls) ergonomic controls we can use our Smartphone and all the controls which we want to use (while gaming) can be customized according to our comfort. This would mean the optimum utilization of resources available with us and also in the best possible way. It will consist of 2 applications: a) Application for desktop. b) Application for Android Smartphone. Gaming Control: It will provide support for motion gaming through Smartphone accelerometer & normal directional key control. The controls provided will differ from game to game. This feature will be the highlight of our project which will allow us to utilize the resources available with us in the most optimum manner with focus on the ergonomic part.

## 2. Rise of the Smartphone

Meanwhile, the portable phone age was brewing. In 1973, Martin Cooper, of Motorola, demonstrated a 2.2 pound self contained cell phone. This technology was packaged as a car phone (later a bag phone), and the mobile age was born in the 1980's.[1]

Cellular infrastructure changed from operator-driven radio to dialed service using analog and then digital service during the 80's and 90's. In the 1980's, early Dynamic Time Warping (DTW)-based speech recognizers were developed for car phones Two examples are the car phone dialer produced by Interstate Electronics, and another by AT&T called the Victory Dialer. By the mid 1990's the US was entering the digital cellular era. [1]

Cell phones dropped to a few ounces in weight, and computing increased from abacus-like to processors running at a few Megahertz with some tens of thousands of bytes of memory. The author owned a Motorola StarTac, a very early flip phone. It had SMS messaging and an internal phone book that would hold 2880 names (more than a typical cell phone today). It weighed 3.1 ounces, and was nearly indestructible. The StarTac came in many versions, and its six-year lifespan covered the conversion from the analog AMPS analog cellular system to TDMA and CDMA digital service in the United States.

### A. Role of android

Android is open source and Google releases the code under the Apache License.<sup>[11]</sup> This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications that extend the functionality of devices, written primarily in a customized version of the Java programming language.[2]

Android consists of a kernel based on Linux kernel version 3.x (version 2.6 prior to Android 4.0 Ice Cream Sandwich), with middleware, libraries and APIs written in C, and application software running on an application framework which includes Java-compatible libraries based on Apache Harmony. Android uses the Dalvik virtual machine with just-in-time compilation to run Dalvik 'dex-code' (Dalvik Executable), which is usually translated from Java bytecode. The main hardware platform for Android is the ARM architecture. There is support for x86 from the Android-x86 project,[6] and Google TV uses a special x86 version of Android. In 2013, Freescale announced Android on its i.MX processor, i.MX5X and i.MX6X series. In 2012 Intel processors began to appear on more mainstream Android platforms, such as phones.[3]

## B. Features of Android

### Storage

SQLite, a lightweight relational database, is used for data storage purposes.

### Connectivity

Android supports connectivity technologies including GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.

### Messaging

SMS and MMS are available forms of messaging, including threaded text messaging and Android Cloud To Device Messaging (C2DM) and now enhanced version of C2DM, Android Google Cloud Messaging (GCM) is also a part of Android Push Messaging service.

### Multiple language support

Android supports multiple languages.[4]

### Java support

While most Android applications are written in Java, there is no Java Virtual Machine in the platform and Java byte code is not executed. Java classes are compiled into Dalvik executables and run on Dalvik, a specialized virtual machine designed specifically for Android and optimized for battery-powered mobile devices with limited memory and CPU. J2ME support can be provided via third-party applications.

### Streaming media support

RTP/RTSP streaming (3GPP PSS, ISMA), HTML progressive download (HTML5 <video> tag). Adobe Flash Streaming (RTMP) and HTTP Dynamic Streaming are supported by the Flash plugin. Apple HTTP

Live Streaming is supported by RealPlayer for Android, and by the operating system in Android 3.0 (Honeycomb).[5]

### Multi-touch

Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero. The feature was originally disabled at the kernel level (possibly to avoid infringing Apple's patents on touch-screen technology at the time). Google has since released an update for the Nexus One and the Motorola Droid which enables multi-touch natively.[6]

### Bluetooth

Supports A2DP, AVRCP, sending files (OPP), accessing the phone book (PBAP), voice dialing and sending contacts between phones. Keyboard, mouse and joystick (HID) support is available in Android 3.1+, and in earlier versions through manufacturer customizations and third-party applications.

### Multitasking

Multitasking of applications, with unique handling of memory allocation, is available.

## 3. Existing Scenario

In existing scenario, we use standard input devices (i.e. keyboard, mouse) and some gaming fanatics use joysticks (while gaming) for controlling laptop. With the help of this project, we are introducing the concept of using Smartphone instead of standard devices for providing controls like typing using Smartphone keypad, controlling mouse pointer and playing games on laptops. Now days, Smartphone has become THE gadget of the decade (along with its successor, Tablet) but most of us fail to optimally use this promising gadget to the full of its core. Our project will focus to explore the features of Smartphone like Accelerometer and (of course) its mobility.

### A. Problems in Existing Scenario

- The frequent movement from keyboard to mouse and back could cause carpal tunnel syndrome.
- If you can't touch type, it can be time consuming to enter the data using keyboard.
- Disabled people often find keyboards difficult to use.
- Keyboard usually makes more noise, like a typewriter.

- Keyboard weights more
- Mouse need a flat surface to be used  
Mouse cannot be easily used with a laptop  
E.g.: you can use a touch pad

## 4. Proposed Design

### A. System Description

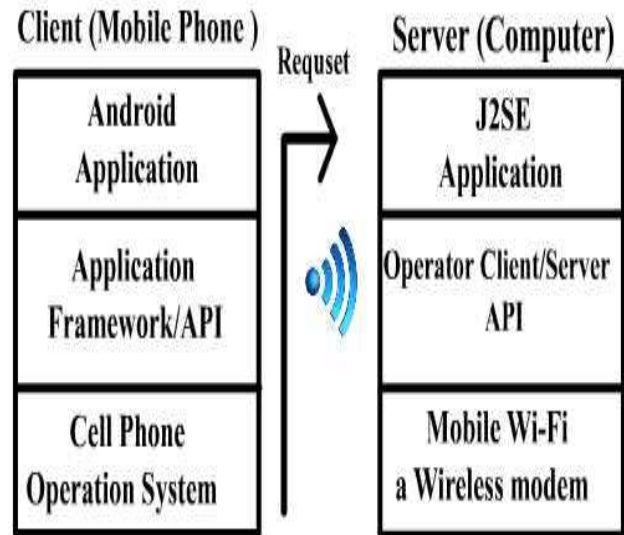
Our project will allow the user to control games on laptop via Smartphone using wireless technology like Wi-Fi. It is a very well known fact that for gaming fanatics, ergonomic controls is the need of the hour. Instead of wasting money in buying new (comparatively expensive than ordinary controls) ergonomic controls we can use our Smartphone and all the controls which we want to use (while gaming) can be customized according to our comfort. It will also provide facility to the user to provide an input through their Smartphone i.e. user can have complete control of laptop/pc via Smartphone through this application. This would mean the optimum utilization of resources available with us and also in the best possible way.

It will also provide keyboard on smart phone screen, enabling user to type from mobile and keyboard signals will be sent to laptop through Wi-Fi connection between smart phone and laptop/pc.

It will provide support for motion gaming through Smartphone accelerometer & normal directional key control. Controls provided of playing games will differ from game to game. Users can also customize these controls according to their need. This feature will be the highlight of our project which will allow us to utilize the resources available with us in the most optimum manner with focus on the ergonomic part.

### B. Client Server Communication

As our mobile devices become increasingly connected, client-server communications are also becoming increasingly necessary. This application is a simple client-server application which has a Android mobile client and a Java server which is run on a machine. In this example, client is run on the Android emulator and the server is run on the local host. In Android ..... is the IP address for local host. This application allows typing a text message on a text field and when the Send button is press the message is sent to the server. Server continuously listens to the port. When there is a incoming message server read it and show it on the standard output.

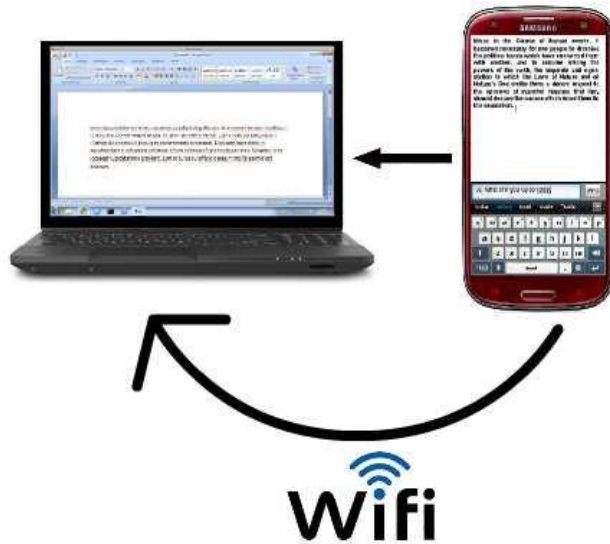


## 3. Phone Controller Communication

### Architecture

This system is the perfect companion for anyone who is always using their computer. Phone to Computer is an application that will allow your phone and your computer to interact over your cell phone's wireless plan or by WiFi. This application allows your phone to control, send data to your computer. Your computer must have an internet connection for this to work. This will allow you to open a file on your computer from your phone, view properties of the files, and delete a file on your computer from your phone.





Basically this application consists of major two parts. The first one is application which you will install on your android device and the second part is the server application for your computer or laptop (the device you want to take control over) It has full control of texts. You've got controller in your hands now. It's really a great app to control your computer via your Android device. It really helps a lot as a controller of your PC. You can control your computer with this application and its great alternative to your mouse and keyboard. All you need to have is just an android device and you're ready to go for it.

## 5. User Experience

Generally, games are played using standard input devices like keyboard and mouse, but it has a limitation as it is wired so there is distance constraint, messy wires, and limited user control. This product will consist of an android application on smart phone which will allow the user to play game using Smartphone feature like accelerometer and gives user an overall new experience. Based on the type of games, different controls will be provided. Users can also customize these controls & look and feel of the screen according to their need. It will also provide keyboard on smart phone screen, enabling user to type from mobile and keyboard signals will be sent to laptop through Wi-Fi connection between smart phone and laptop.

### A. User Characteristics

- The users of this software would be possessors of Android mobile phones with Wi-Fi enabled.

- Desktop users need to have Wi-Fi drivers on their PC.
- Users will experience the functionality to type and scroll the cursor on laptop/pc screen by just typing or scribbling on smart phone touch screen.
- It will thus provide the user wireless connectivity and user can easily control the cursor or type even from certain distance.

It will provide an overall new experience to the user to play games by connecting laptop to smart phone through Wi-Fi and use smart phone as an input device.

## 6. Benefits of Intelligent Pc Controller

- PowerPoint control.
- Wi-Fi and Bluetooth supported
- Game controller. You can create your own custom remotes.
- click or type messages, or execute special key combinations (macros) on your computer directly from your phone
- Touch screen mouse control with multi touch support
- Keyboard control
- Simple text entry
- A user-friendly phone app.
- Easy server and app setup

## 7. Future Enhancements

This system can be integrated in order to use it remotely for which Mobile as a Remote Controller can be used to control your computer from distance. The main purpose of this system is to turn your mobile phone into a universal PC remote control. Remote control applications have long been a popular option for connecting laptops and home PCs to remote systems, but typically these have been, for example, accessing a Windows system from another Windows system. But with the rise in power and capabilities of Smartphone's and mobile operating systems, it will be now possible to remotely access and control desktop systems from a Smartphone or tablet. These apps range in capability from full-fledged remote control tools to apps designed to consume video and music to programs that turn a Smartphone's into something akin to a television remote control.

Observing the benefits of these remote control mobile apps, we've focused on fully capable applications that can satisfy the needs of business users and that work on multiple mobile and desktop operating systems. With these apps, users can enjoy the freedom of mobility while still being able to access applications and files on their traditional desktop systems. PC Remote Control is a true universal remote control. It allows the user to modify the current behavior as well as add support for new applications.

## 8. Conclusion

We are developing a desktop application which acts as server on PC/Laptop & mobile application which acts as client. This allows user to use Smart phone's keypad & mouse pad to operate/control Laptop/PC. Also it will allow user to play games on their PCs through Smart phone using sensor feature as well as directional key games. Thus we are implementing a system that provides ease and convenience. And will also allow the user to make full utilization of his/her Smart phone.

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