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PC Controller using Android Device

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Abstract: From some years there has been a significant evolution in mobile or smartphone computing and communication devices like mobile phones, media players and many more. This project e is proposed to be able to perform most of the actions a normal computer keyboard and mouse can accomplish. Wireless presentation controller ensures good freedom of movement. but, most of such devices do not allow user full operation on the computer, like running the program, moving or closing an application window, etc This project proposed the design and implementation of converting smartphones into computer remote controllers by which user can wirelessly operate a computer. sWe proposed the system which can reduce the strain of sore moment with the use of computer. It enables the user to move cursor, click operation and applications, play with media such like forward, rewind, pause, run, and increase or reduce the volume of a media file, multi-touch scrolling , pinch gesture for zoom in and out. This could be achieved by useing the proposed application that occurs to the computer network via Wi-Fi which can connects both system with each other, then command from the mobile phone that remotely controls the computer.

I. INTRODUCTION

There a few several situations where we want to wirelessly and comfortably operate a computer, where the computer screen is design onto a big screen through a projector or big-screen television, such as classrooms, conference/meeting rooms, mobile, workgroup project environments and modish office environments, and even living rooms. Several specifically designed devices are available on the market for the goal of operating computers remotely and wirelessly. Wireless keyboard,, uses each of two Bluetooth or wireless USB mini-receiver plugged into the USB port of computer for the communication among the keyboard and the computer. Some wireless keyboards have a touchpad for controlling the mouse pointer. Wireless presentation controller, as shown in Fig. 1b, allows user to operate his/her computer remotely for PowerPoint presentation over Bluetooth connection. It usually has several buttons, including mouse-left, mouse-right, next slide and previous slide buttons (for PowerPoint presentation), and even a small size rectangle touchpad for moving mouse cursor

II. LITERATURE REVIEW

The advent of sophisticated mobile platforms, particularly Android, has significantly altered the landscape of remote device management and control. Among the myriad contributions to this evolving domain, several key studies stand out for their innovative approaches and foundational principles. For instance, Lingyan Bi et al. [1] introduced a groundbreaking method to design an Android-based Remote Control System utilizing the Java Native Interface (JNI), markedly enhancing user convenience by bridging the gap between native Android applications and lower-level system operations. Concurrently, Michael Spreitzenbarth et al. [2] embarked on an exploratory journey into Smartphone Mobile Malware, unveiling novel forensic analysis techniques that underscore the critical need for secure mobile computing environments. Further extending the discourse on Android system security, Xinfang Lee et al. [3] detailed an Android-based Forensic System, paving the way for advanced methodologies in digital forensic investigations on mobile platforms.

Moreover, the work of Enck, W et al. [4] presents a robust framework for a secure Android Remote controlling mechanism, emphasizing the importance of safeguarding remote transactions executed from dispersed locales. Complementing these studies, T. Richardson et al. [5] explored the application of internet-based Android applications, illustrating the practical implications of leveraging internet computing to enhance the functionality and reach of mobile devices. This body of research collectively highlights the transformative impact of Android in reshaping not only the functionality and security paradigms of mobile devices but also their integration into the broader ecosystem of personal computing.

The proliferation of smartphones has not only redefined the boundaries of what mobile devices can achieve but has also introduced novel challenges and opportunities in the integration of these devices with traditional computing systems.

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As technological advancements continue to equip mobile devices with capabilities once exclusive to PC architectures, the imperative to seamlessly integrate and control these devices from afar has never been more pronounced. Among the solutions emerging in this space, Virtual Networking Computing (VNC) systems have gained prominence for their ability to offer remote visualization.

III. SYSTEM ARCHITECTURE

In the proposed system there is a client-server architecture. In which android mobile phone is a client and PC/Laptop is a server. Client sends request to the server for connection establishment via wireless communication (Wi-Fi). Connection is established using handshaking. After connection establishment ports are assigned and sockets are established at both ends for communication. Desktop application is in Java and mobile application is in android. Windows registry is hierarchical database which stores some configuration setting options and some processes which helps to control mouse movements. When the user control mouse from android mobile then in background the process of desktop application will communicate with mouse process which is in windows registry. And this This Is Another Level 2 Heading

IV. INTERPROCESS COMMUNICATION

In computing, InterProcess Communication (IPC) is a set of methods for the exchange of data among multiple threads in one or more processes. Processes may be running on one or more computers connected by a network. IPC methods are divided into methods for message passing, synchronization, shared memory, and remote procedure calls (RPC). The method of IPC used may vary based on the bandwidth and latency of communication between the threads, and the type of data being communicated. There are several reasons providing an environment that allows process cooperation:

1) Information sharing
2) Computational speedup
3) Modularity
4) Convenience
5) Privilege separationAcknowledgments

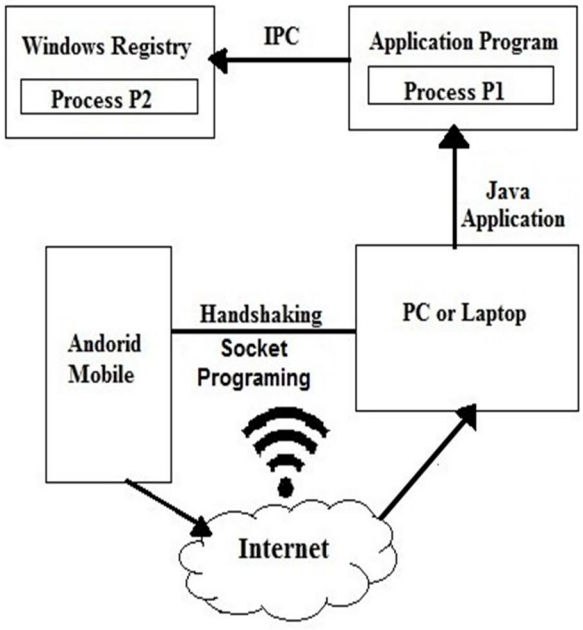


Fig. 1. This is a figure caption. It appears directly underneath the figure

IPC may also be referred to as inter-thread communication and inter-application communication. InterProcess Communication (IPC) is the transfer of data among processes. For example, a web browser may request a web page from a web server, which then sends HTML data. This transfer of data usually uses sockets in a telephone-like connection and data exchange techniques between processes. References

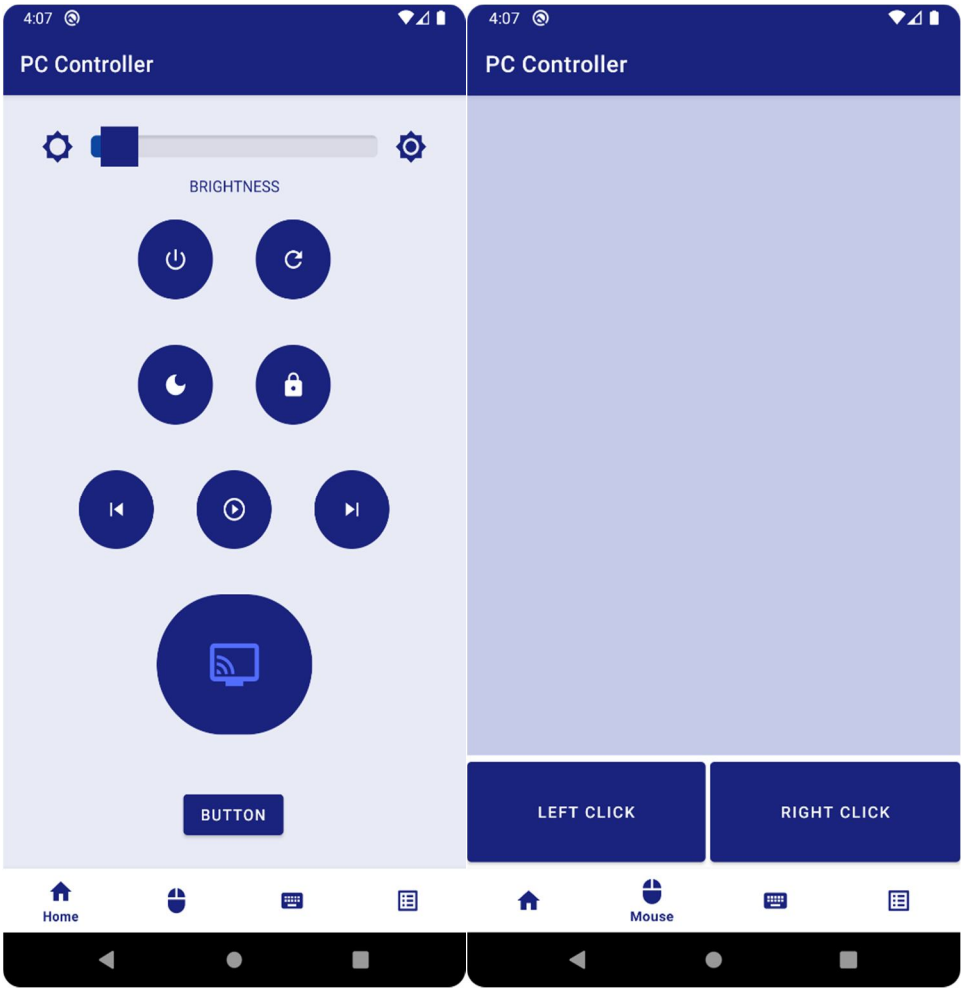
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V. SOCKET PROGRAMMING

A socket is a bidirectional communication device that can be used to communicate with another process on the same machine or with a process running on other machines. Sockets are the only InterProcess Communication that permit communication between processes on different devices such as here in this project the devices are laptop and android mobile. Normally, a server runs on a specific computer and has a socket that is bound to a specific port number. The server just waits, listening to the socket for a client to make a connection request. The client knows the hostname of the machine on which the server is running and the port number on which the server is listening. To make a connection request, the client tries to rendezvous with the server on the server's machine and port. The client also needs to identify itself to the server so it binds to a local port number that it will use during this connection. This is usually assigned by the system. A client's connection request is sent to server if everything goes well, the server accepts the connection. Upon acceptance, the server gets a new socket bound to the same local port and also has its remote endpoint set to the address and port of the client. It needs a new socket so that it can continue to listen to the original socket for connection requests while tending to the needs of the connected client. The connection is made on the client side, if the connection is accepted, a socket is successfully created and the client can use the socket to communicate with the server

VI. REMOTE CONTROL ARCHITECTURE PROPOSAL

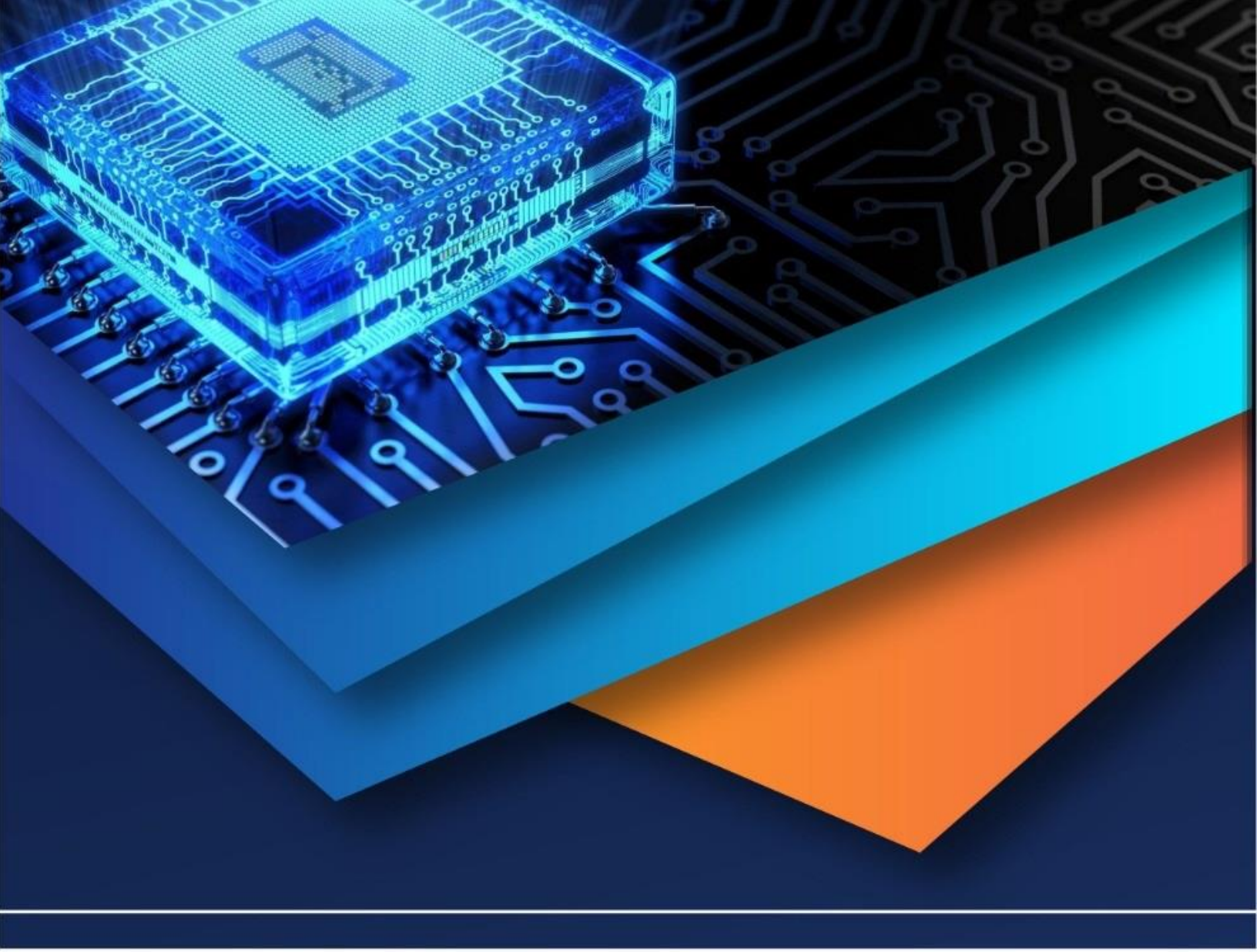
The architecture proposed in this paper consists of a remote control architecture of mobile devices on the Android platform based on a client / server model oriented to services. The server layer is performing the services of mobile device management and accepts the connection from different clients. The client layer, available from a remote device, performs the interaction between the control equipment and the monitored device. As can be observed in Figure 1, the architecture offers several types of connection to different clients in order to allow the remote control to all the users. Below, the features that will implement the architecture will be listed and will be determined the chosen solution will be determined.



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