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Practical Use of Virtual Smartphone

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***Abstract*: Personal computers are preferred less with compare to smart phone in our daily life because smart phone have become omnipresent. Hence virtual Smart phone came into picture with tiny projectors, speaker, mile, camera and also cloud computing to connect both the virtual and physical world. There are some malicious applications which can harm the smart phone and cause our private information to be leaked which can cause our huge losses. This paper is about a virtual smart phone platform that will soon be known as VSP. It introduces virtual smart phones deployed in the cloud in physical smart phones to enhance its capabilities. Virtual smart phones eliminate the physical dependence of mobile phones. With the help of VSP's thin client, virtual smart phones can be operated remotely and the limitations of physical mobile devices can be overcome. The use of virtual smart phone radio waves and small projectors and cloud computing technology makes the virtual image of our smart phone available on the palm of our hand and allows the user to control his smart phone virtually without physical touch. Virtual images of smart phones can be created by scanners and made available on the user's palm through a small projector and can also be used for making calls and watching movies.**

***Keywords*: VSP, Virtual Smartphone, smart phone, natural hand gesture.**

1. Introduction

The number of smart phone users has been growing rapidly these years. More and more people are spending their time using smart phones instead of laptops or desktop computers for its portability and connectivity. However, the hardware resources of a smart phone are generally very limited compared to traditional computers, such as a central processing unit (CPU), memory, storage, and battery. And mobile app developers need to consider these limitations. In addition to differences in hardware resources, software stacks also vary between devices. There are currently many different mobile operating systems (OS) such as iOS, Android, Windows, etc. Incompatibility between different devices leads to different user experiences. Some computing-intensive applications may not run smoothly on low-end mobile phones. And some apps may not come with a specific mobile OS due to the lack of a mobile developer in the software company. Virtualization, meanwhile, has been thoroughly researched over the years and applied to the industry to manage resources more efficiently. Managing multiple computers and servers can be a daunting task. Using virtualization, all computers can be managed on the cloud side while creating or upgrading new patterns is more convenient. Similarly, this method can also be applied to smartphones to facilitate seamless experience and maintenance for mobile users. In this paper, we propose the VSP virtual smartphone platform, which uses thin-client computing with mobile phones to provide end users with a virtual mobile OS. By running the OS and apps remotely, the distance between different devices can be reduced. VSP is basically a computer-vision based wearable and gesture information interface that enhances the physical world around us with digital information and proposes natural hand gestures as a way to interact with that information.

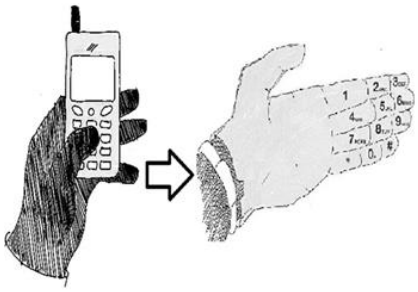

Fig. 1. Natural hand gestures

2. Related Work

Recently, there have been a wide variety of multi-touch interactions and mobile device products or research prototypes that have made it possible to manipulate components of the user interface directly using touch and natural hand gestures. Most of these systems rely on physical touch-based interactions between the user's fingers and the physical screen and therefore do not recognize and incorporate touch independent gestures. It is a very complex technology in a simple portable device. When we bring connectivity, we can get instant, relevant visual information on whatever object we choose or interact with technology based primarily on hand augmented reality, gesture recognition, and computer vision based algorithms and more.

1) Increased reality

Increased Reality (IR) is the term for a live direct or indirect view of the physical real world environment whose elements are amplified by virtual computer-generated imagery. It relates to a more general concept called mediated reality in which a computer's view of reality is modified (possibly reduced rather

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than augmented). Growth traditionally occurs in real time and in a meaningful context with environmental elements.

Virtual smart phones use augmented reality concepts to superimpose digital information on the physical world. With the help of advanced IR technology. Information about the real world around the user becomes interactive and can be used digitally. Artificial information about the environment and the objects in it can be stored and retrieved as an information layer at the top of the real world view. The main hardware components for augmented reality are: display, tracking, input device and computer. The combination of powerful CPU, camera, accelerometer, GPS and solid state compass is present in most modern smart phones, making them a potential platform.

2) Gesture recognition

Gesture recognition is a subject of computer science and language technology aimed at interpreting human gestures through mathematical algorithms. Gestures can arise from any physical movement or posture but usually from the face or hands. Many approaches have been developed using signals and computer vision algorithms for sign language interpretation. Gesture recognition can be seen as a way for computers to begin to understand human body language, thus creating a richer bridge between machines and humans than the primitive text user interface or GUI (graphical user interface), which still limits most of the input Keyboard And mouse. Gesture recognition enables humans to interface with machines (HMI) and interact naturally without any mechanical devices.

3) Computer Vision Based Algorithm

Computer vision is the science and technology of machines that can see. As a scientific discipline, computer vision relates to the theory behind artificial systems that receive information from images. The software tracks the user's gestures using a computer vision based algorithm. The computer vision system for tracking and recognizing hand gestures controlling the menu is based on a combination of multi-scale color feature detection; See based hierarchical hand model and particle filtering. With qualitative interrelationships in terms of scale, position and direction, hand gestures or positions are represented on different scales in terms of hierarchy of multi-scale color image features. In each image, multistage color features are found.

Fig. 2. Hierarchical hand models

3. Objectives

VSP inventions relate to the transfer of data and the establishment of communication from one human body to another human body or from one human body to digital devices or vice versa without relying on any platform. The purpose of this discovery is to establish connection / communication with humans and digital devices by human touch on the palm / hand. VSP works on two types of data transfer.

First, it establishes voice communication between users using GSM technology without any physical cellular phone. Second, for the transfer of data with humans and digital devices. It uses the Internet, intranet networks, or any other type of data servers that connect devices and humans, and uses authentication methods such as usernames / passwords, facial recognition, and palm lines to distinguish one user from another by drawing patterns on a virtual screen. Palm identification or fingerprint detection can be used.

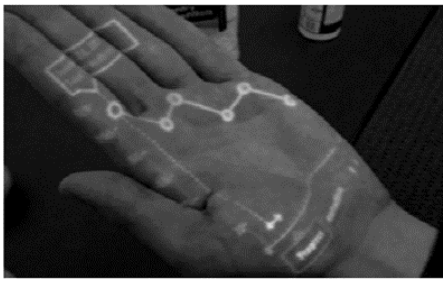

Fig. 3. Establishing the connection/communication

4. Working

The VSP function consists of 5 main steps: enable and authenticate VSP, call, receive calls, capture image / video, copy data and paste / pass data on other VSP and digital devices.

1) Enabling VSP

A VSP is a wearable device and the user has the key to enable (on) / disable (turn off) the device via the power button. When the user enables the VSP device, an icon appears on the user's palm or hand as the user chooses to display status (if the user is signed in). If the user can touch this icon to login or change users. Using various authentication methods such as: enter username and password, draw a secret symbol or pattern, facial recognition, image selection and fingerprint search and palm line search after the user successfully signed in, VSP is now ready to call and receive And other operations.

2) Call

After enabling VSP the user is now able to call and communicate with their relatives and other persons. To make a call, dial a mobile number using a virtual key or using a voice recognition system. To establish a call between two users, VSP uses two methods which are as follows.

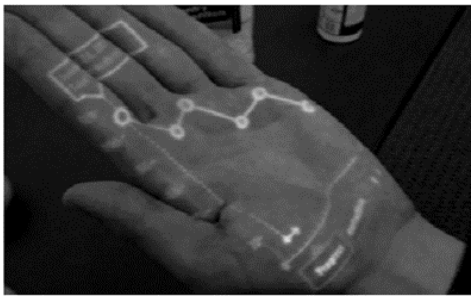

Fig. 4. Dial mobile number using virtual key

3) Call using SIM

The VSP device has a micro SIM (Subscriber Identity Module) through which the device establishes a call using GSM /CDMA (Global System for Mobile Communications / Code Division Multiple Access) technology.

4) Call using VOIP

The VSP device has Wi-Fi (wireless fidelity) and a mobile data option that connects the device to the intranet / internet, enabling the user to make calls using VOIP (Voice over IP) technology. Using VOIP the user is able to make calls to enable other VSP users as well as all other GSM and Internet VOIP digital devices. When the user is not connected to the Internet / Intranet, the call is made using the SIM without the user's permission, but when the user is connected to the Internet it asks the user to choose the option by which the user wants to call. To another person.

5) Get a call

When a VSP user makes a call from another VSP user or another digital device user (physical mobile phone supports personal data from laptops, desktops, and PDAs), if the user selects Vibrate mode, the incoming call notification will be displayed according to the user's selected profile. The tiny vibrator therefore indicates incoming call via motor vibration and also identifies the user making the call behind the palm using VSP's high density projector. In silent mode it shows only the name of the caller on the back of the palm. The user can receive a direct call using the VSP device speaker and mouse. For VOIP calls both users must be connected to the Internet using Wi-Fi or mobile data.

6) Capture image / video

VSPs are also able to capture high quality images / videos using their high quality camera by clicking the capture image button or by taking gestures (gaining fame using our index figure and thumb) to take photos. After taking the picture, it shows the picture on the user's hand using VSP system. To shoot a video with the same gesture, the user just needs to convert the camera mode photo to video. Users also zoom in or zoom out while capturing image / video using their hand gestures.

7) Copy data

VSP allows users to transfer (copy / paste) data from one human body to another human body or device using a single touch gesture. For copy data the user must first login to VSP device and connect to internet / intranet. VSP (holding finger on user's hand for more than 1.5 seconds using VSP projector) suggests copying data item using long press (search through listener program) on the capable data item to identify the data item to be copied Is. A message appears indicating that the data item is being copied and the data is being copied to the user's unique location in the cloud. Data can also be alternately copied to the data cloud (instead of long pressing for 1.5 seconds). For example, double-tap on a data item or draw a circle around the data item to start copying. Using this process the user copies multiple files to pass / paste on another device and temporarily copies all the data stored in the cloud with the unique ID of each data item.

5. Technologies Used

A VSP is basically a wearable device that is a combination of hardware as well as software. Hardware VSP includes processor unit, RAM and ROM memory, power supply (battery), sensors (accelerometer, 16 proximity sensors for manual touch detection), device mode (on / off), micro vibrator motor, LED indicator for USB port. . . Is. (For charging or connecting other devices), 4 micro projectors (such as Pico projector), 1 HD camera for image and video capture, low energy required Wi-Fi and Bluetooth devices, GPS system, 4 touch buttons (on / off) Off) button, snap) button, sound up button, sound down button) and nano sim card slot. To achieve all these objectives the software uses gesture recognition system, touch based interaction system, augmented reality, computer vision based algorithm.

6. Conclusion

VSP is basically a computer-vision based wearable and gesture interface that enhances the physical world around us with digital information and provides natural hand gestures as a way to interact with that information. It connects the physical world with the virtual world. VSP provides an intuitive way to communicate and transfer data between different users as well as different digital devices.

VSP Search meets our two future needs. First, it is a free form of physical dependence of devices. Second, it connects our physical world to the virtual world. Here are some VSP requests:

1. Used in health monitoring system.
2. Used to get information about any product / item.
3. Used to connect news and weather updates.
4. Used to connect different devices virtually.
5. Used in education and training system

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