

Virtual Smartphone

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Abstract —Smartphones have become increasingly ubiquitous in our daily life. The number of smartphones users and mobile application providing area unit growing speedily. A smartphone is usually expected to supply PC-like practicality. The recent advent of novel sensing and show technologies has inspired the event of a spread of multi-touch and gesture based mostly interactive system. The recent advent of novel sensing and show technologies has inspired the event of a spread of multi-touch and gesture based mostly interactive system. In these systems user could move directly with data victimization bit and natural gestures. Nowadays there are several method by that we are able to hook up with digital world within the controlled surroundings victimization multi-touch and gesture based mostly interaction. Moreover, information still resides on screens or dedicated projection surfaces. These isn't any link between our interaction with these digital devices and interaction with the physical world around North American nation. During this paper, we have a tendency to gift Virtual smartphone, a multi-touch and gesture based mostly interaction system. Which replace the physical movable device to the virtual multi-touch and natural gesture based mostly interaction on the user's organ like articulation radiocarpea, palm, eyes and etc. By that user communicate with different digital devices over the network. For this, the package technologies used like gesture recognition, increased reality, and pc vision based mostly formula. And hardware technology like projection machine. Virtual smartphone primarily turns the human organs as a transportable by that is in a position to user connect with the digital world likewise as others.

Keyword —Augmented Reality, Computer Vision Based Algorithm, Gesture Recognition, Human Organs, Sensing, Virtual, Virtual Reality.

I. INTRODUCTION

Introduction the recent technologies has inspired the event of a spread of multi-touch and gestural primarily based interaction system. In these paper, delineate that however user could act directly with data mistreatment bit add natural hand gestures. Currently a days there square measure uncountable approach by that we are able to connect with digital world. By mistreatment gesture primarily based interaction. Unfortunately, most good phone and alternative devices square measure did not give gestural and multi-touch primarily based interactive systems and therefore the intuitive expertise of full-sized gestural systems. Moreover, data still show on screens or dedicated projectors and alternative devices and surfaces. There's no link between our interaction with these digital devices and interaction with the physical and virtual world around North American country.

In this paper, we tend to gift virtual smartphones, a multi-touch and gestural primarily based interactive system. That replace the physical movable devices to the virtual multi-touch and natural gesture primarily based interaction on the user organs by that user communicate with alternative digital devices over the network.

Virtual smart phone essentially turns the human organs as a movable by that is ready to connect with the digital world additionally as alternative peoples like their friends and relatives Virtual smart phone could be a pc vision primarily based wearable and gestural data interface that augments the physical world around us with digital data and proposes natural gestures because the mechanism to act with the knowledge. Recently, there are a good sort of multi-touch interaction and mobile devices, merchandise and prototypes that have created it attainable to directly manipulate computer programme elements mistreatment bit and natural gestures. Most of those system depends on the physical bit primarily based interaction between the user's fingers and physical screens and therefore don't acknowledge and incorporate bit freelance freehanded gestures.

Virtual smartphones technology takes a distinct approach to computing and tries to form the digital side of our lives additional intuitive, interactive and specifically additional natural. It's plenty complicated technologies squeezed into an easy transportable device. Once we usher in property, we are able to get instant, relevant visual data projected on AN object we tend to obtain or act with the technology is especially supported hand increased reality, gesture recognition, pc vision primarily based algorithmic program and etc.

II. TECHNOLOGY USED

Virtual smartphone is basically a wearable device which is combination of software as well as hardware. In Software it uses Gesture Recognition System, Touch Based Interaction System, Augmented Reality, and Computer Vision Based Algorithm to fulfil all the Objectives. In Hardware, Virtual smartphone consist of Processor unit, RAM and ROM Memory, Battery, Sensors (Proximity Sensor, Accelerometer Sensor), LED indicator for device Mode (ON/OFF), Micro Vibrator, USB Port, HD Camera, WI-FI and Bluetooth Devices and Nano SIM card slot.

2.1 Augmented Reality

Augmented reality, usually abbreviated "AR", and could be a pc generated content overlaid on a true world surroundings. Increased Reality hardware comes in several forms, together with devices that you just will carry, like handled displays, and devices you wear, like gliding joint watches, headsets, and glasses. Common applications of increased reality technology embody video games, television, and private navigation, through there square measure several alternative uses in addition. Increased reality (AR) could be a term for a live direct or indirect read of a physical globe surroundings. It's associated with a additional general conception known as mediate reality during which a read of reality is changed by a devices. The augmentation is conventionally in period and in linguistics context with environmental parts. As an example, golf broadcasts generally displays a line on the screen that tracks the flight of the ball. In navigation, increased Reality is employed to show location info in period. This is often usually done through a wide-awake show that comes image ahead of you wish a photo.



FIGURE 1: Navigation (Augmented Reality)

Virtual sensible phone uses increased Reality conception to set digital data on the physical world. With the assistance of advanced increased reality technology (e.g. adding pc vision and object recognition) the knowledge regarding the encircling planet of the user become interactive and digitally usable. Artificial data regarding the setting and also the objects in it will hold on associated retrieved as an data layer on prime. the most hardware elements for increased reality are: show, input devices, and sensible phone devices like sensible wrist joint watch, lens, and video game box, combination of powerful processors, RAM, camera, measuring system, world Positioning System (GPS) and solid state compass square measure typically gift in trendy smartphone, that create them prospective platforms.

2.2 Virtual Reality

Virtual reality may well be an engineering that immerses a user in an Associate in Nursing fanciful or replicated world, or simulates presence inside the earth. Game may well be a medium that gives us a simulated experience of the physical reality. Because of this, game permits us to purposefully prune the danger of physical reality and to further safely turn out things that do not appear to be potential inside the earth.

2.2.1 Virtual world

A Virtual world is a 3-Dimensional environment generated by a computer in which one can interact with others and create objects as part of that interaction.

2.2.2 Sensory Feedback

In Virtual Reality, individuals are provided with direct sensory feedbacks based on their bodily positions and sports within the virtual global. A virtual display, for example, responds to a player moving his or her head by means of updating the displayed image accordingly.



FIGURE 2: Virtual Reality

2.3 Gesture Recognition

Gesture recognition could be a topic in computing and language technology with goal of decoding human gestures via mathematical algorithms. Gestures will originate from any bodily motion or state however unremarkably originated from the face or hand. Current focuses within the field embody feeling recognition from the face and hand gesture recognition. Several approaches are created victimisation cameras and pc vision algorithms to act sign languages. Gesture recognition is seen as how for computers to start to grasp body language, therefore building a richer bridge between machines and humans than primitives text user interfaces or perhaps GUI's (Graphical User Interfaces), which still limit the bulk of input to keyboard and mouse. Gesture recognition permits humans to interface with the machine (HMI) and act naturally with none machine devices. Gestures is accustomed communicate with a pc thus we'll be principally involved with empty handed philosophical doctrine gestures.

2.4 Computer Vision Based Algorithm

Computer vision is behind a number of the foremost attention-grabbing recent advances in technology. From formula which will determine carcinoma additionally as dermatology's to cars that drive themselves, it's pc vision formula that area unit behind these advances. Computer vision may be outlined as "the theory and technology for building artificial systems that get data from pictures or multi-dimensional information." As a subject area, pc vision cares with the speculation behind artificial system that extract data from pictures. The image information will take several forms, such a video sequences, and views from multiple cameras, or multi-dimensional information from a medical scanner. The code tracks the user's gestures victimisation pc vision primarily based algorithms. the pc vision system for pursuit and recognizing the hand postures that management the menus is predicated on a mixture of multiple scale color feature detection, read primarily based hierarchical hand models and particle filtering. The hand postures or states area unit drawn in terms of hierarchies of multiple scale color image feature at totally

different scales, with qualitative interrelations in terms of scale, position and orientation. In every image, detection of multiple stages color feature is performed.

III. OBJECTIVE

Virtual sensible phone is helps to transfer of knowledge Associate in Nursinggd build the communication from one device to different device Virtual Smartphone is largely an makes an attempt to create the communication between users and digital devices additional tangible and interactive. the target of this invention is establishing the communication/connection between humans and additionally digital devices (smartphones) by barely gestures on the human organs. Virtual sensible phones work on 2 varieties of knowledge transfer. First, it build the voice affiliation between the users with the assistance of GSM technology with none physical cellular or smartphones. Second, for transfer of knowledge between the humans and additionally with digital devices. It build use of the web, computer network network or the other sort of knowledge servers through that device and humans square measure connected to and also the distinguish from one user to a different by the authentication methodology like username/password, drawing a pattern on the virtual screens, face recognition, palm recognition victimisation palm lines or fingerprint detection are often used. In Virtual smartphone speech from one human to a different are often done either by victimisation GSM or internet/intranet technology. The transferring of knowledge from one creature to a different creature or device victimisation Virtual Smartphone. the primary and second digital devices could also be gesture recognition Virtual smartphone system connected to a network as well as an information storage cloud and each uses Virtual smartphone technology.

IV. APPLICATIONS

4.1 Google Glass

Google Glass may be a technical masterpiece. It combines varied functions and options during a very tiny unit. additionally to smartphone and camera. It supply varied options like web association, as well as GPS. The core feature of Google glass may be a visual layer that's placed over the truth (Augmented Reality). This layer opens a door to superb new potentialities.

4.1.1 How Google glass does works?

Within the Google glass incorporates a mini projector, which projected the layer via a clever, semi-transparent prism immediately at the retina in the attention. due to this the image, despite the fact that it is so near the attention, is sharp and clear.

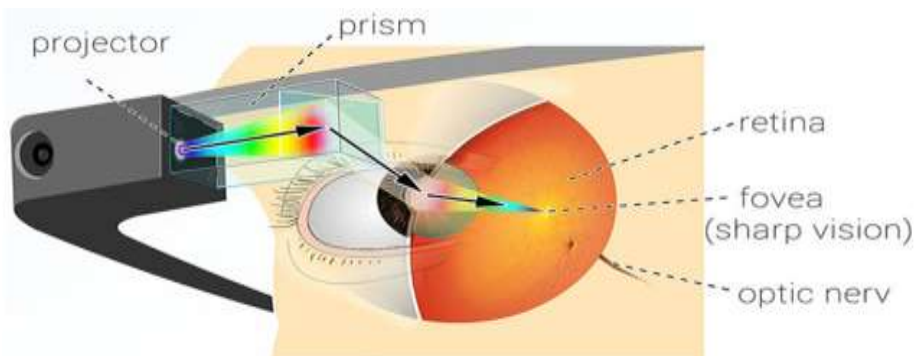


FIGURE 3: How Google Glass works

Here the top view on the eye. It shows how the prism focuses the image on the retina (Fovea= point of sharp visual image). Depending upon how the Google glass has wear, the layer appears in the upper right corner or in the middle of visual

field. when the Google glass is excessive at the nostril, so that you can nearly see via underneath, you ought to flip the attention up to view the image shape, due to the fact the prism is semi-obvious it at once in front of the pupil.

4.1.2 Challenges

There are lots of challenge to implement this. But, the biggest challenge for Google will now be to make the Google glass also usable people with normal glasses.in this instances the Google glass has to be positioned beforehand of regular glasses which does now not look and experience well or like a pitcher. Or Google has to fabricate character customized prisms, but this will be substantially greater high priced than the usual glass production.



FIGURE 4: Google Glass

4.2 Smart wristwatch

4.2.1 Working

Working of Virtual smartphone consist of 5 main steps i.e. Enabling and Authentication of Virtual smartphone, make a call, receive a call, Capture a image or video, copying or transferring a data to other Virtual smartphone or digital devices as follows:



FIGURE 5: Virtual Smartphone

4.2.1.1 Enabling or on/off Virtual smart phone

The Virtual smartphone could be a wearable device and user has the key to on or off the device through the button. once the user alter the Virtual smartphone device, AN icon seems on the user's palm or arm as per user as per selected by the user for showing the standing. very first thing to alter virtual smartphone, perform the authentication like enter the username/password, Drawing a secret pattern, face recognition, image choice and fingerprint detection and palm line detection when the a user has signed in with success, Virtual smartphone is currently prepared for acting operations.

4.2.1.2 Make a Call

After Enabling Virtual smartphone now user is able to make a call and communicate with other users. To make a call, dial mobile number using virtual key or using voice recognition system.

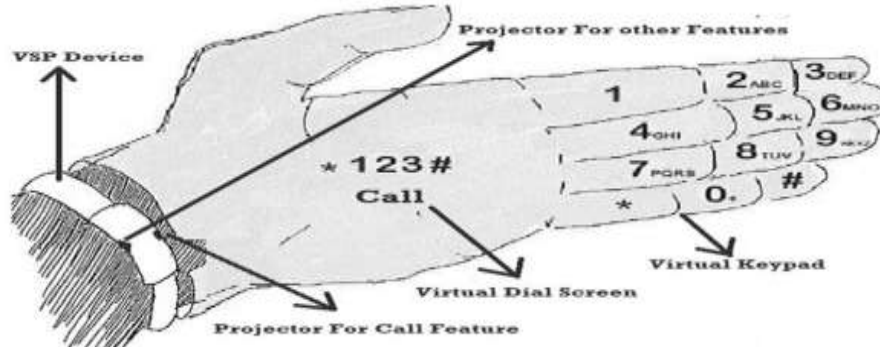


FIGURE 6: Make a Call
4.2.1.3 Receive a call

When a Virtual smartphone user by different Virtual smartphone user or different digital devices. The notification of incoming decision are going to be shown as per user selected profile if user choose a vibrate mode, the little vibrator motor indicated incoming decision by vibration and additionally shown the identity of occupation user on back aspect of palm victimisation high density projector of Virtual smartphone. If user choose sound mode, incoming decision notified by selected ring tone with user name on the rear aspect of palm. For attending the incoming decision user simply bit, swipe the incoming decision icon or different bit gesture selected by user. to talk the caller user either use Bluetooth telephone receiver or wired telephone receiver that is connected to Virtual smartphone device victimisation either a pair of 0 or 3.0 instrumentality. User is also ready to receive decision directly victimisation Virtual smartphone device speaker and mice.

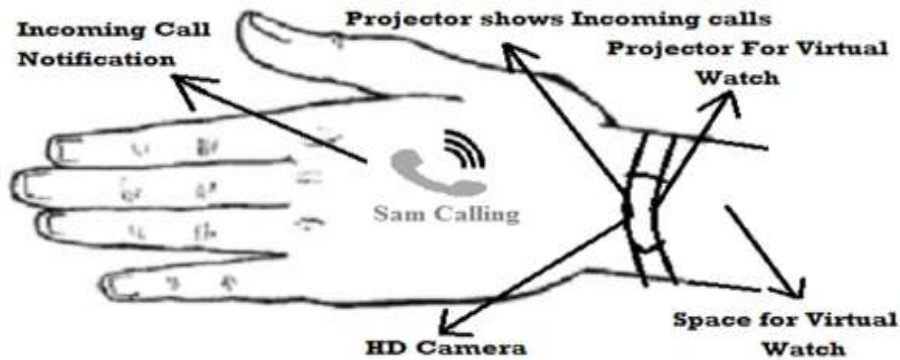


FIGURE 7: Receive a Call

4.2.1.4 Capture Image or Video

virtual telephone is also capable of capture excessive nice photograph or video using their high exceptional digicam, through clicking, button or the use of gesture for taking photos. After taking the photograph it indicates the picture on user hand using digital phone device projector. For capture the video with the equal gesture user just required to trade the digital camera mode photographs to video. consumer additionally zoom in out whilst they seize photo or video the usage of their hand gesture.

V. CONCLUSION

Virtual smartphone is basically a Computer Vision based wearable and gestural interface that augments the physical world around us. With the digital information and proposes natural hand gestures as the mechanism to interact with that information. It

connect physical world to Virtual world. Virtual Smartphone give intuitive way to communicate and data transfer between different users as well as different digital devices.

Now a days, we can say goodbye to field trips to the museum or art gallery because thanks to Augmented Reality and Virtual Reality, the museum and art gallery will come to you and it will be available any time. This are just some of the future uses of Augmented and Virtual Reality in every field and it is sure to revolutionize the educational process.

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