Gesture Control Environment Using Sixth Sense Technology

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Abstract – This study proposes the creation of an interface that combines existing technologies such as the Internet of Things, image processing, and sixth sense etc., reducing the hardware constraints levied on users and improving system responsiveness. Sixth Sense technology is a gadget that uses image processing and hand gesture detection strategies to seize, we can also zoom in and zoom out. The implementation of this type of picture processing and recognition of gesture the usage of MATLAB is almost proven. "Sixth Sense/WUW (wear your world)" makes use of gesture recognition, augmented reality, computer vision, and radio frequency identification to develop Sixth Sense technology. Mapping may be done anywhere using the zoom in and zoom out features. The camera also allows the manipulator to capture images of the division they are observing and then assemble them on any superficial or surface. The device has a wide range of applications whereas it is portable, movable, and may be worn around the neck. This concludes that we are carrying a world which is digital with us and we can catch pictures anytime anywhere by just doing some simple gestures.

Key Words: Hand gesture detection, Sixth sense technology, Internet of Things, Image processing, artificial neural networks (ANN), augmented reality.

1. INTRODUCTION

Sixth sense technology helps in minimizing the gap between the real and the computing world by displaying the digital information out in the real environment and allows the user to interact with it as described in [8]. Sixth Sense technology is a method of teaching a computer to detect and perceive real-world items and respond appropriately. People employ their five sense organs (ear, nose, eye, body, and tongue) to receive data about the surroundings when they encounter anything. This data assists in taking decisions and selecting the better sequence of action as this study demonstrates, the maximum significant information that can assist us in making the greatest decision is not generally observable with our five sense receptors; instead, information digital data and familiarity can assist us in making the finest option. The number one purpose of gesture popularity studies is to create a device that may pick out particular human gestures and use them to deliver statistics or for device control. A gesture can be described as a bodily motion of the hands, arms, face, and frame with the reason to deliver data or meaning.

Our essential purpose in growing this device is to create a complicated human-computer interaction device that makes use of computer inspired vision and prescient to detect human behavior or laser pointer movement through an internet digital digicam, process it, after we perform a predefined action or task. This movement might be controlling the movement of mouse, drawing a picture, or controlling hardware. We are trying to convey the imaginative and prescient to business robots through this.

2. COMPONENTS USED

The hardware additives are combine in a wearable part.

• **Digicam**: A camera uses pc imaginative and prescient algorithms to take and comprehend an object in view, in addition to song and examine the person's hand motion. It transfers physical information and statistics to a cell device. The camera facts and monitors what the person can see with his personal eyes. It also monitors the consumer's movements using the marker pen (purple, blue, green, and yellow) on each fingers, which are identified by geometrical motions.

• **Projector:** Interactivity and share are made viable by the use of a projector. The assignment itself consists of a battery with a three hours battery life. To be utilized as interfaces. The projector shows visible statistics on physical surfaces, walls, and other objects in our surroundings. We need this virtual facts to collate with the bodily global in a meaningful way. The facts might appear like a component of the object. A mini projector

initiatives statistics from a smart phone onto any floor, including an item, a wall, or a people.

- **Reflect:** The usage of the replicate is tremendous because the projector dangles pointing downwards from the neck.

- **Cell Element:** The cell devices like cell phone in our pockets transmit and obtain voice and facts everywhere and to all and sundry thru the cellular net. An accompanying smartphone runs the 6th feel software, and handles the connection to the internet. An internet-enabled clever cell phone in the consumer's pocket methods the video records. Other software program searches the web and interprets the hand gestures.

- **Colored markers:** It's proper on the operator's fingertips. The Camera Identifies precise geometrical styles that may be Convey to the computing tool for processing when crimson, gold, grassy, and navy band are used to mark the person's fingertips. The direction and layouts of these creators are was diagrams that function commands for trained programs.

3. LITERATURE SURVEY

The scientific or non-scientific term for the sixth sense is Extra Sensory Perception, or ESP. It includes getting information that not one of the five senses can provide. This technology goals to convey online information and technological know-how into normal life. It provides an extra sensory receptor: a sixth sense by extending using virtual information past our five senses for choice-making correctly.
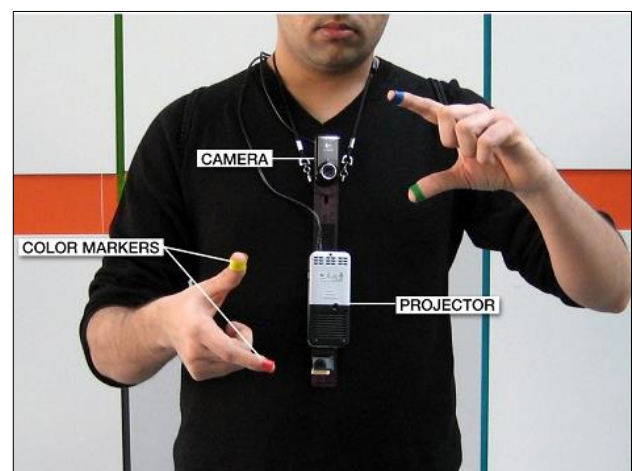
Earlier Sixth Sense Prototype:

Mae's and his MIT group of seven graduate college students investigated how someone can be more effective with the world around them and get right of entry to the records it presents while not having to take away a complex piece of technology (cell phone). They first commenced with a bracelet that examine a Radio Frequency Identification (RFID) tag to determine such things as which book a consumer had at which retailer. They additionally protected a hoop/ring with infrared sensors that used a beacon to talk with grocery store to supply product details. If we select a packet of anything that indicates food then the ring changes its color from red to green as we choose a packet of macaroni, indicating if the food was organic or not or any other criteria/situation we program into the device. Then they got some innovative idea - the concept of taking internet information and showing it on a close-by surface which is physical. They used wristband for it. The wristband became an modern and inventive module, however they nevertheless needed to examine the statistics accrued from the band on their phones. Anyone carrying the wristband can choose to pick up a copy, through projecting critiques onto a shop floor. You may see some of the reviews. They commenced through mounting a greater huge projector on a helmet. However, this helmet idea proved complex and unproductive since, relying at the attitude or the angle at which the projector was adjusted If a person is projecting information onto a wall, the final results might be projected on their face/body when they turn to talk to another person.

Recent Prototype:

They've switched to a smaller projector and created a pendant module to wear around the neck. The Sixth Sense prototype consists of a small pocket projector, a mirror, and a camera. The hardware is incorporated into a pendant-like module that may be worn anywhere. A cell phone is used to connect the camera and the projector. The device/system is now operated by the pendant-like module that is attached to the projector, which is worn around the user's neck. Using gestures, you can convert this into a small and portable computer device during this course, and your fingertips acts as a keyboard and mouse. A normal digicam/webcam, a 3M battery-powered projector, and a connected mirror made up the

module.They were all connected to the internet via a smartphone. For less than $350, "The prototype allows the user to project digital data from his phone onto any real-world surface, such as a wall or a person. Pranav Mistry wore the device around his neck and coloured marker caps on four of his fingers (red, blue, green, and yellow) to allow the camera to distinguish the four fingers and recognise his hand gestures as geometric shapes using software he created"[8].

4. WORKING

The algorithm's technique is primarily based on sixth sense technology, which requires the person to execute multiple gestures with finger-worn color markers and perform actual-time actions with pictures preloaded in the utility. Our intention is to zoom photographs with the aid of shifting the mouse cursor when the person moves his/her palms. Digital camera, color caps, and MATLAB loading on a pc are the additives utilized in our task. The method operates in a continuous loop, with the camera capturing live video and transferring it on the pc, where MATLAB gives the data and detects the colors at the user's fingertips. In our proposed method, first interplay with the bodily international is carried out via digital camera. Digicam takes the video and starts off evolved recording the live video and in continuation of recording it sends the stay video to MATLAB which is already hooked up in pc that's related with the digicam. In MATLAB, code is ready which convert the incoming stay video from digital camera into frames of photographs or slicing of video is performed within the form of snap shots. Those snap shots which might be acquired from the slicing of video are then processed for coloration popularity procedure. The output of the shade reputation technique are the photographs that includes the ones colors of which colour caps are gift at the fingertips of the consumer, the historical past of the photo and shadow if gift. The hands of consumer are not shown inside the output pix. For this purpose, RGB values of the colour caps are set prior in the code in order that no different coloration will be detected inside the photo after color recognition besides the cap's shades and framework.

The output images are displayed in continuation and at the same speed as the speed at which slicing of video is done, so that it looks like a continuous movie in which the input is physical world and the output is only those colours which are present at the fingertips of the user. In the same manner the combination of crimson, gold, grassy, and navy is identified and hence by the performing, we can take the snapshot.in the same way more variety of motions of the finger marker are processed and allow the people to link the snapshot.

5. APPLICATIONS, ADVANTAGES AND IMPROVEMENT

Applications

- Take pictures
- Make a call
- Call up a map
- Check the time
- Create multimedia reading revel in
- Drawing software
- Zooming functions
- Get product data
- Get flight updates

Advantages:

- Sixth feel is a user-friendly interface which combine virtual facts into the physical world and its gadgets, making the complete international your laptop.
- It makes use of hand gestures to have interconnect with digital facts.
- Information get admission to at once from tool in present situation.
- It is an open source and fee powerful and we are able to thoughts map the idea everywhere.

Future Improvement:

- To take away colour markers.
- To comprise camera and projector interior cell computing gadget.
- on every occasion we vicinity pendant- fashion wearable tool on desk, it need to permit us to use the table as multi touch consumer interface.
- making use of this generation in numerous hobby like gaming, training structures and many others.
- To have 3-D motion monitoring.

6. CONCLUSIONS

The sixth sense generation recognizes the items in our surroundings and familiarize oneself with the data in any way we require without using small electronic devices. This set of technologies can be used to create a variety of interfaces, One in every of that is a gesture-managed environment that makes use of system studying and is used in the net of object. It is able to be used as 5th sense for handiwork person particularly have the ability to build their own applications. Sixth sense technology has obviously evolved into A obvious user interface, making existence simpler, quicker, and plenty extra secure. Sixth experience technology is distinct from previous Technology and is singular challenge for hack and others. Colored markings have been phased out in recent years.

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