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Patent Search

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Abstract:

Virtual Reality stimulates the user to immerse themselves in computer-generated 3D environments. The VR technology allows the users to visualize abstract concepts, observe events at atomic or planetary scales, visit environments, and interact with events that is unavailable due to distance, time, and safety factors. VR helps the users to master, retain, and generalize new knowledge when actively involved in the synthetic environment. The main objective of this invention is to develop a standalone VR HMD headset with in-built hand-tracking technology that can enrich their knowledge and understand real-world scenarios. The developed VR headset has three advantages over the existing system. The first is the inclusion of positional tracking sensors to achieve immersion and a greater sense of presence. These sensors enable users to move freely in the virtual world. The next is the inbuilt hand-tracking technology that is used to track the gestures and perform the operations accordingly. The final is the addition of haptic sensors to enable force feedback when the students pick up a 3D object in the real world. The model and approach are described in detail with the help of figures. Figure 1 represents the engineering diagram of the Standalone Virtual Reality HMD Device with in-built hand tracking technology, and Figure 2 represents the block diagram of the Standalone Virtual Reality HMD Device with in-built hand tracking technology

Complete Specification

Claims:We claim:

1. The proposed standalone VR HMD headset with in-built hand tracking technology (4) for users helps to conceptualize and immerse themselves in the synthetic environment by adding exclusive VR content with in-built hand tracking system (3) and haptic feedback (4) for gaze and grasp movement which is considered as novel research. The various sensors and equipment required to build the proposed VR HMD device are listed below:
 - Nimble Sense sensors (S2) are employed to track the hand positions and perform the virtual world's actions accordingly.
 - Tactile sensors (S3) involve stimulation of the sense of human touch(haptic), and it contains a series of sensors to provide the position and orientation of the user's hand.
 - MPU-6050 is used as its Inertial Measurement Unit (IMU)(S1), consisting of sensors such as an accelerometer, a gyroscope for rotational tracking, and positional tracking (1).
2. A positional tracking module, according to claim 1 is a necessity for the user to achieve immersion and a greater sense of presence. These sensors enable users to move freely in the virtual world.
3. The inbuilt hand-tracking module according to claim 1 to track the gestures and perform the operations accordingly.
4. The haptic module according to claim 1 enables force feedback when the users pick up a 3D object in the real world. , Description:VR headsets entail a pair of biconvex lenses that take the images on display and spread them throughout the view field. Stereoscopic methods show two offset images distinctly to the viewer's left and right eye. Human eyes perceive these individual images as a single image, which creates the illusion of depth through stereoscopy. It generates an impression of three-dimensional

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