PERSONALIZATION OF PHYSICAL WORLD USING MIXED REALITY CONCEPT: AUGMENTED REALITY AND VIRTUAL REALITY

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Abstract: Augmented reality is gaining more popularity and have been considered as a vital technology. A combination of AR and VR is known as Mixed Reality (MR).This concept is more complicated than augmented reality and virtual reality since it integrates the several types of technologies which includes advanced optics, sensors, and computing power. This allows users to visualize the real world and virtual world at same time, a high range of communication between users and computational device to manipulation of the surrounding information. We studied the technologies collaborated into a single device, which will allow user the capability to arrange augmented concepts in real time space which gives the best creating scenario of overlying virtual images.

Index Terms: **Mixed Reality, Augmented Reality, Virtual Reality, Computing power**

I. INTRODUCTION

Augmented reality and virtual reality are gaining its feet in personalized reality which is about more than gaming, companies are finding enterprise potential in the technology. The major goal is to substitute keyboards and displays with new technique for collaborating the scene with communication and gestures. Mixed Reality concept and environment is termed by Milgram as virtual object and real world merged together into single display[1]. As Mixed Reality concept have proved for single user applications and very interactive in nature.

Advancements in Augmented Reality and Virtual Reality define new terms to interact with technology. The user having devices designed for gaming and entertainment is grown due to AR's and VR's organization potential has proved to be the real cause for excitement.

MR advances is more interactive nature and we relate in connecting with the new way of working. The ability to sense information from things around us, and the information gathered to act on our physical and visual feedback changes the ways in which we do our work and prioritize it.

The Mixed Reality concept is intended to self-adaptable process, which are extremely flexible with computing machine, which act intelligently and autonomously by implementing concepts such as Internet of Things and cyber systems [2].

Mixed reality increases the ability of augmented reality, Virtual Reality and Internet of Things technology by combining physical surrounding and digital realities. Instead of removing real world objects, we simply add up new layer of content on top for immediate view. MR intelligently combines physics, gravity, dimension, even personality to digital content relative to our surrounding. As a result, we are able to build the new relation between real and virtual objects by removing the barriers that change our skills to make conclusions quickly, learn and process crucial information, by visualizing possible scenarios before reacting, or share information and jobs between workspace and group of individuals.

II. PROBLEM STATEMENT

Interpretation and utility engineering of Mixed Reality interfaces and applications are functionally difficult to control [3] with users exposed to real world confounds and sometimes fragile experimental technologies. The best of both the physical and digital

worlds, a real-time view of actual surroundings combined with an overlay of intelligent virtual objects that allows for advance type of interactions through gestures(sign) and voice based signals.

III.   LITERATURE SURVEY

Paper 1:

Title: ARmatika: 3D Game for Arithmetic Learning with Augmented Reality Technology
Year: 2016

Perceiving mathematics is consider complicated for learner without any new teaching methods. It is often considered as most difficult subject and learners possess lack of motivation. As per the research studying it in visual manner will make it look more appropriate. ARmatika application derived in digital series of gaming which is interactive with learners. Competitive process is used here for learning motivation which are connected to the web services leaderboard. Thus perform intellectual service to learner which is easily adaptable for learner.

Paper 2:

Title: Augmented Reality – Principles and Practice
Year: 2016

The audience working on AR technologies usually have a thorough interest in augmented reality. This audience include professionals, beginners, students. A background in computer graphics and computer vision will be useful for working on AR technologies. Audience involved will get a broad idea or scope about the components and terminologies used in developing AR technologies. Audience involved can learn about AR and develop their own applications. AR technologies need collaborative tools, and a variety of teleconferencing and telepresence technologies.

Paper 3:

Title: Setting up Virtual Reality and Augmented Reality Learning Environment in Unity
Year: 2017

Frameworks for complex model content in both augmented and virtual reality for constructing environment. The curriculum contain the setup for constructing 3-dimensional models which generate objects of real world such as buildings, bridges, river, dams. The implantation of such real world object uses the unity in engine in combination with reality head mounted devices or virtual reality headsets. Developing the application for interaction in both virtual and augmented reality environment which support understanding for user, the content which are surrounded to them. The main challenges are the addresses for creating 3-D contents. To overcome these challenges the addresses which are integrated to the object models into the unity. Thus, the framework for 3-D modelling functionalities are added by unity for better visualization and interaction with the models.

Paper 4:

Title: Gesture Based Manipulation of Virtual Terrains on an Augmented Reality Environment
Year: 2017

Virtual terrains modelling interface is done with free hands in augmented reality environment. The manipulation of virtual terrains are allowed using suitable gestures which can interact them virtually. The interaction in Augmented Reality markers uses the leap motion controller. An application is developed which can interact user to virtual terrains directly through their bare

hands, by this the virtual objects were using fiducial markers in augmented reality for the detection. To represent the virtual objects AVRlib Library layout are maintained in planar. AVRlib library makes layout for both marker and controller in same plane. The application is evaluated in environment where none of user knows the previous knowledge, nature of application and working of leap motion controller.

IV.   CONCLUSION

In this paper, we have studied various techniques and technologies associated with the reality concept environment. In order of advancements in this field some of the works include overlaying virtual images, computing power, power consumption and communication. Use cases and concepts are emerging and pilot program ramping into production. When performing AR usability studies many confounding factors exist in the world, such as lighting and visibility influences, dynamic environments, or sound interference. Additionally, real world noise might affect crucial components of AR system such as localization and registration, inhibiting accurate user data.

V.   ACKNOWLEDGEMENT

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