MICROSOFT HOLOLENS

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***Abstract* - As technology is increasing day by day ,along with CPU and GPU the unit features a Holographic Processing Unit(HCU) that is responsible for processing that integrates real world and holographic data. This paper describes an application called "MICROSOFT HOLOLENS" that Microsoft is hoping hololens will be used in design data analysis,medical imaging and standard computing and gaming.**

Index terms: Augmented reality, virtual reality, windows 10.

I. INTRODUCTION

As technology is increasing day by day, the thinking power of human is also increasing reached to an everest and that lead to the introduction of many many new technologies.As a part of it Microsoft has manufactured a pair of mixed reality smartglasses called "MICROSOFT HOLOLENS" on March 30 2016.Hololens gained popularity because it one of the first computer running the windows mixed reality under windows 10 operating systems.

Microsoft Hololens is a virtual reality headset with transparent lenses for an augmented reality experience. According to Microsoft, "Holelens is a fully untethered holographic computer."It is known to be a mixed reality device because ,it tries to blend the real and digital worlds. With these hololens we see the objects that look like their are in the real world.Virtual Reality (VR) plays an important role in hololens because VR immerses humans in a environment where we cannot see anything around us rather we see the virtual world. These hololens make us feel that we are flying in outer space while we sit in one palce. As virtual reality plays an important role in hololens Augmented Reality(AR) also plays an vital role in hololens. AR tries to enhance the world w around us with extra information. AR simply headsets simply throw images and text on a screen overlapping what you are looking at.

II. PROPOSED SYSTEM

The hololens is a head mounted display unit connected to a adjustable, cushioned inner headband, which can tilt hololens up and down,as well as forward and backward.

In front of the hololens we have some sensors and related hardware,including the cameras and processors .There is a transparent combiner glass which display images on the lower half and there are small 3D audio speakers that do not obstruct the external sounds.

There are two pairs of buttons one for displaying brightness which presented above the left ear and volume buttons at right ear.At the left arm side there is a power button and at right arm side there is a 3.5mm audio jack.

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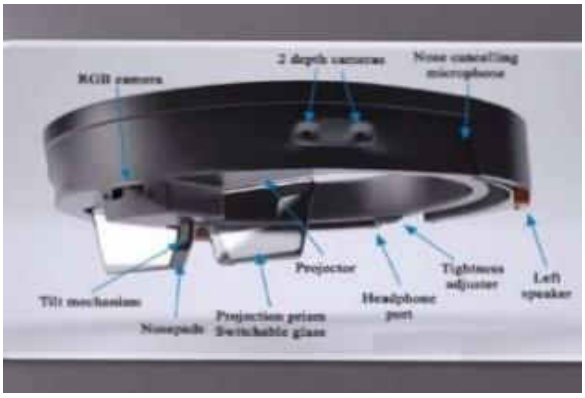

III. ***ARTIFICIAL INTELLIGENCE vs AUGMENTED REALITY***

Artificial Intelligence(AI) is totally different from Augmented Reality(AR). AI gives a particular system a kind of intelligence.so it the science which tries to make artificial programs intelligent whereas coming to AR means seeing reality ,butwith some virtuals things on it.

IV. ***HARD WARE SPECIFICATIONS:***

Display	2x HD 16:9 light engines Automatic pupillary distance calibration 2.3M total light points holographic resolution, 2.5k light points per radian
Sensors	Inertial Measurement Unit, 4x environment understanding cameras, mixed reality capture, 4x microphones, ambient light sensor
Processor	Custom Microsoft Holographic Processing Unit HPU 1.0, Intel 32-bit architecture
RAM	2GB
Storage	64GB
Weight	579g
Camera	2MP,HD video
Audio	External speakers,3.5mm audio jack
Connectivity	Wi-Fi 802.11ac, Bluetooth 4.1 LE, Micro-USB 2.0
Power	2-3 hour active use battery life, 2 weeks standby, passive cooling
OS	Windows 10 with Windows Store Human Understanding: spatial sound, gaze tracking, gesture input, voice support

V. ***SOFTWARE REQURIEMENTS***:

1.Windows 10,Windows 8.1,Windows7
2.Visual Studio 2015 update 2
3.Hololens Emulator
4.Unity Technical Preview

VI. ***HOLOLENS IN BIGDATA:***

At first the Hololens may look like an expensive toy, designed for gamers. Or you may see it as a tool limited to designers. But moving past that, the Microsoft Hololens has significant potential in the field of data analytics. One of the key challenges of Big Data has been turning the outcome of analytics into a humanly digestible format, so it can be easily explored and understood. However there is a limitation on what you can show in 2D within the confines of a computer screen. The Hololens has an opportunity to change this. Adding an extra dimension to data visualisation combined with a 360 degree view may fundamentally change the way we present data in the future. In addition to data exploration, augmented reality may allow the outcome of analytics to be attached to the real world objects they relate too.

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VII. *MICROSOFT HOLOLENS vs GOOGLE GLASS*

Both Google and Microsoft envision a future where a small wearable device could do wonders like skydiving, assisting with elevator repair, showing real-time traffic updates and weather reports, shopping, and so much more. Welcome to virtual reality, where you can interact with the virtual world with just a headset. Both the tech giants have revolutionized the ways we communicate and explore things.

Google Glass is a wearable computer that looks more like regular glasses but with information-only display on one side just like sunglasses which doesn't get in the way of your everyday life. The idea was to make it comfortable enough to wear all day long. Microsoft HoloLens, on the other hand, isn't designed for all that stuff – it's like an augmented reality headset that transforms the world around you with holograms offering a unique augmented reality experience.

The biggest difference between the two technologies is probably the purpose. Google Glass is designed to give unrestricted access to almost everything in the simplest way possible and provide all the information you want in hands-free format**.** With Glass, the entire world is at your fingertips**.** HoloLens, on the other hand, is a stand-alone wearable device which transforms your vision into the virtual world.

VIII. *Tools dealing with Microsoft Hololens:*

Basic Windows 10 OS.
C#.Net .
XAML .
Visual Studio.
Holographic Emulator.

IX. *USES OF MICROSOFT HOLOLENS:*

1. Remote Instruction:

Imagine getting step-by-step instructions on things like home repair from an expert. Visual diagrams would actually show up in space around the user indicating exactly what you need to do next. This application could even extend to the battlefield, where detailed medical instructions could be given to untrained personnel in the midst of combat.

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2. 3D computer aided Design:

the possibilities of using the HoloLens for gaming are Imagine building a 3D model of pretty much anything you can imagine in the physical space around you. It's similar to what's seen in the movie Iron Man as Tony Stark interacts with holographic objects to build his devices (check out the video below…the only thing missing is the glasses) It's also one of the ideas that has captured the imagination of many when it comes to the HoloLens.

3. Gamification of Tasks:

We all need a little extra motivation at times when it comes to exercising. The HoloLens has the potential to turn such tasks into a game. Think how much more fun you'll have throwing jabs and hooks at a punching bag when your HoloLens is superimposing a boxer (or threatening mugger) over the bag. Or, imagine getting on your treadmill and replacing the world around you with interesting, interactive, scrolling scenery as you jog. By turning monotonous tasks into a game, HoloLens could make life much more exciting and help you build healthy, productive habits.

4. Gaming:

\Gaming is another potential use that was shown off in the introductory video from Microsoft andfascinating. Several journalists were able to get a hands-on look at how this would work during the product's launch event, and although the demo was rather basic, a fully immersive gaming experience is something gamers have been clamoring for for quite some time. Imagine playing a game like Minecraft using holographic models in your living room. HoloLens promises to make that happen.

5. Decorating:

HoloLens is first being geared for use mostly inside the home or office and not necessarily on the go. One way it can be helpful is by visualizing how new decorations would look in your house or apartment. No more trying to picture how that new paint color for your wall will look with your new couch; you'd actually be able to see it projected holographically and make the best decision for your living space. And instead of awkwardly holding a picture up while trying to gauge how it looks in a certain location, your HoloLens can show you exactly how it will look placed in any number of locations!

6. Holographic attractions and entertainments:

Going to a haunted house during Halloween season is plenty fun, but if you wore a HoloLens, creepy attractions could become even scarier by integrating virtual elements that can't exist in the real world. On a similar note, supporters of 3D Movies have wanted to make the audience feel like part of the action for years. HoloLens could help them bring virtual elements into the space of the user.

This sort of thing could open up a whole new genre of mixed-reality entertainment, leveraging both real and virtual content to achieve the effect on the user. Roller coasters, haunted houses, movies, and laser tag could all be the basis of entirely new kinds of experiences.

7. Virtual reality interfaces:

People spend lot of money on the latest, biggest, clearest flat screen televisions. But with the HoloLens you could use a number

of virtual sceens of any size, saving you hundreds or thousands of dollars. You could even watch movies or browse the internet through a virtual screen no matter what part of the house you're in (say, lying comfortably in bed). Physical screens and monitors may eventually become things of the past, as we transition to interfaces that exploit physical intuitions about the world and naturally fill the space around you.

8. Head up GPS:

This would require further development on the HoloLens and even legislative approval but a heads up GPS display would be incredibly helpful for drivers and pedestrians alike. You could see instructions and diagrams laid out on the road in front of you, giving you unambiguous instructions about where to go next.

X. ***Disadvantages:***

1. A consumer who regularly wears prescription glasses would find it difficult to use the Hololens because of the intefrference with their eyesight. The alternative for these consumers is to wear contacts, but as we all know, not everyone is fit to wear contacts.
2. Advertised as mobile and portable, the Hololens design is not too flattering. It has a noticeable size and some consumers may not be comfortable wearing this device in public.
3. Communication may be affected within consumers because the Hololens limits the user's view to their own and the fuctions of the Hololens requires the user to work with themselves.
4. The high price may not be attractive to potential consumers
5. For business professionals, this product takes on another role regarding communication and display of ideas. A professional may have less interaction with his/her partner because this product helps to research alone and applications
6. make the user much more advanced without needing to contact another individual in the business.

XI. ***ADVANTAGES:***

1. It's augmented reality, not virtual reality
2. Virtual objects can be stationary while You move
3. You might never have to buy a TV again.

XII. ***FUTURE OF MICROSOFT HOLOLENS:***

In the ensuing year, Microsoft continued drumming up more excitement for HoloLens by showing off crazy consumer-oriented concepts in gaming and sports. At an event in June 2015, Microsoft showed how users could essentially play as God in a Minecraft world by using HoloLens. It looked incredible. Four months later, Microsoft showed off a completely insane first-person shooterin which enemy spiders crawled out of the walls to attack users. It was even more nuts than the first demos. Then, one year after the big announcement, Microsoft debuted a concept showing how people might someday watch NFL games using the HoloLens to deliver stats and highlights in holographic images all around the room. The early concepts looked like they were straight out of a sci-fi fever dream—and we loved them.

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