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### Smart Glasses

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**Abstract :** Smart glasses are portable and portable devices that display information simultaneously directly in front of the customer point of view using Augmented Reality (AR) Techniques. Generally, they can also perform complex tasks, run other applications, and support internet connections. This research paper provides a framework for alternative approaches to facilitating interaction-based interactions with intelligent glasses, as well as specific design considerations. In addition, it discusses the social consequences that could lead to a wide range of smart glasses and possible security concerns. Head-worn displays (HWD) have recently received significant attention, mainly due to the release of the temporary version of Google Glass. Additionally, we look forward to the launch of the Google Glass-one commercial in the coming months with the latest news from Facebook, Inc. Oculus Rift-2 amplifies the popularity of such devices even further. The volatility of mobile device purchases is growing significant and some business analysts predict more than 20 million Google Glass annual sales in 2018. In addition, researchers have been studying and testing HWD for several years.

**Keywords-** Augmented Reality (AR), Gesture-based, Head-worn displays (HWD), Virtual Reality (VR), Wearable.

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#### I. INTRODUCTION

Smart glasses with wearable devices with various sensors, integrated processor and display screen that often give your impression of both the Physical world and the Virtual world (AR, VR) This expands the reach of smart glasses in such fields. Healthcare, Animation, Industry, Sports, Entertainment and many more focused on customer engagement. There is also a way to track users' eyes to see what the user is looking at commonly known as eye tracking technology. This helps smart watches to get important information about users' interests and activities. Smart glasses can be used to create better user experience while gaining access to information and the internet in a timely, accessible and secure way with video streaming, eye movement tracking to determine a person's status and the list goes on. Smart glasses fall under the category of smart clothing which is a Basic term for Combining everyday wear and technology. The earliest models for smart wearables originated in the 1960s and materials embedded in this technology appeared in the 1970s and 1980s. These smart glasses can also be fitted with a camera for a variety of purposes. To take personal photos, most of the user's personal information can be captured, as the device can determine when your wearer is happy and can take pictures or take videos automatically. The great advantage of this feature is that we can store the best user memories stored in the video file, which can help the user to remember those moments whenever they want.

The purpose of smart glasses is to calculate data. to present in a way that you can eat for the sole purpose of weaving these clever computer equipment in everyday life. There are three different ways users can use smart glasses.

#### II. THE PARADIGMS OF SMART GLASSES

- 2.1 Augmented reality (AR)** The world is enhanced and augmented by virtual objects . In this case the user can see the real world but also discover the visual content created by the computer device and be shown

an additional light source that does not block the real world view. Interacting with those objects is a way of interacting with electronic devices .example augmented realty (AR) by Microsoft hololens.

**Fig. 1 augmented reality of smart glasses**



**2.2 Virtual reality (VR)** The main goal is to create a fully visible world for the user to see, connect with and immerse themselves in the virtual world. The user will only see this virtual world, any other light sources will not touch the eye. One notable difference from the simple screen is that the user's actions affect the physical world. second. movement affects what visual content will be visible to the user. A recent example of this reality is the play channel.

**Fig. 2 virtual reality of smart glasses**



**2.3 Diminished reality** Objects are reduced in scope by filtering out the light reflected or emitted by those objects in relation to the eye. This is often used in conjunction with augmented reality (AR) so that substitutions can be replaced.

### III. TYPES OF SMART GLASSES

**3.1 Google Glasses** is a hands-free device that is used by a skilled and fast worker. Google X upgraded google glass provides Google services dedicated to technological advances like non-driving vehicles. Google Glass Features:

- Touch pad is available that allows users to control the device by swiping. Backlinks will let you know about current events, and forwarding will show you past events such as phone calls, updates and photos.
- The Google Glass acquisition version uses liquid crystal in silicon, a sequential color scheme system, a bright LED display on it.
- Google Glass is used with a smartphone combination and one of its main uses is to display notifications correctly and quickly.

**Fig. 3 google glass**



**3.2 Vusi Blade** See-through AR Smart Glasses powered by Industrial-leading Waveguide optics. Vusi blade balances business and customer needs. It is designed as an everyday luxury and is designed specifically to keep records in industry performance. It contains Noise cancellation microphone, UV protection lenses, full color, High Definition Camera, wireless wi-fi, dual haptic response, multilingual voice control and microSD expansion.

**Fig. 4 vusi blade**



**3.3 North Focal** North Focal after its launch becomes an effective AR product on the market. They come with a brilliant look and contain almost all the features that other Augmented Reality product software has. It works like a smartwatch where it will act as an extension of your phone by personalizing and can access Alexa and automatically respond to text messages. It almost sounds like magic when you use North's Focal. They behave like any other ordinary glass and that is the amazing feature it contains. Vusi Blade is a Focal closing contender. You can stop the whole cycle in Focal by using iteration in it which is a different tool that comes with it.

**3.4 Every sight Raptor** Raptor is the world's first human-powered bicycle computer and not a bicycle. Designed to enhance everyday riding by exposing a clear layer of AR information in front of the cyclist's eyes. Having predictable real-time experience that allows you to keep your eyes on the road to improve safety and to focus more on performance, posture, and accomplishment. Satisfying ideas and enjoying amazing bike rides. The Raptor HD's forward-looking camera can deliver your unforgettable moments with a real-time real-time video bar.

**3.5 Epson Moverio BT-300** The Epson Moverio BT-300 offers a new way of seeing the Earth. It incorporates features of Epson's cutting edge silicon-based OLED digital display technology making the device the most flexible telescope with smart glasses on the market. It has a high resolution indicating this New level of drone pilot has a Si-OLED display, making full information of FPV equipment with visible lime. It has amazing image quality - HD (720p) display and high brightness ensures bright colors and crisp Images. HD front-facing camera with 5MP front-facing camera for capturing HD-quality HDV videos and photos. Works very well with Quad-Core CPU with 2GB of RAM and 6 hours of battery life.

**3.6 Dream Glass :** Dream glass opens the future of Smart Glass design and design. It helps to create a multi-functional customer environment with smart glass technology, dedicated customer service and smooth aesthetic designs. Top features of Dream Glass:

- Maximum natural sunlight mandating UV protection
- Reduce its energy costs and reduce A / C cooling

#### IV. APPLICATION OF SMART GLASSES

**4.1 Location services** The practical use of taxpayers' preferences that we see in location-based services facilitates many benefits from user perspective. we may cover digital data that will contain digital animation, photographs and other information in a real and virtual environment. Used to integrate the real unpopular technology of taxpayers we see with location-based sensors, geometers and GPS, you can really know its power. A few examples.

- Wikitude
- Google Translate

**4.2 Gaming** AR works well in the gaming industry and has been close to us for years. It's all about covering computer-generated images that give a realistic view. Augmented Reality apps that run on a collaborative map high above the visual display area of major multiplayer battles. Some of the top used Augmented Reality apps are:

- SketchAR
- Pokemon Go
- Google Translate

**4.3 Entertainment** Users wear 3D movie glasses. By replacing them with intelligent glasses, the cinematic feel in the audience can be enhanced. It is also used for virtual cinema experiences. Users can decide what they see depending on their location. Another major market can be real games and Augmented reality. Augmented reality games can reach a wider audience than gaming consoles today because they cannot be played outside and are based on interaction with other people in addition to advanced visual effects.

**4.4 Commerce** Commercial billboards and posters may also be displayed with video. A movie ad poster can be enhanced with a movie trailer if the user wears the appropriate smart glasses. Smart glasses technology with face recognition software can help employees identify customers and display their own information. Customers entering the stores will be provided with smart glasses to display all the details about the products and help them to speed up what they want in the store. This data may be used to determine the number of customer numbers visited in this space.

**4.5 Sports** During most games a person does not have much time to use a computer device and it is not possible to use his hands to interact with the machine. Useful information for a sports person can be performance measurement, performance. comparisons, perhaps navigation, weather alerts or messages and more. Information can be displayed on the wearer without disturbing the sports activity from the peripheral point of view. Smart glasses can also be used to take pictures or video during games activated by speech command.

**4.6 Education** Virtual reality glasses can be used to teach history by allowing students to view historical sites not only through textbooks but also with a 3D visual world where they can move freely. These glasses are also used to create training simulations. Examples will be included as pilot simulation, flight simulation and military training or surgical training. It helps to be competent in those activities in a safe environment.

#### V. FUTURE POTENTIAL AND CHALLENGES

**5.1 Future power** The current use of smart glasses ensures many forward-thinking businesses jump into the ship. While widespread public use is still pending, smart glass technology has identified important areas for use, development and enhancement. It is so helpful that it is not surprising to hear that tech giants like Apple, Facebook, and Samsung are working with their smart AR-enabled glasses.

**5.2 Challenges** Faced with real-time, smart glasses companies are currently striving to expand their space. Despite the fact that businesses are finding the best solutions to this technology of smart glasses, the public will still have to wait a while to reap the benefits of mass access and use. In addition, ensuring a comfortable design and cooling methods to satisfy a solid calculation will be the key to mass acceptance. Aside from these challenges, there are many smart glasses being distributed today that offer great value to a variety of users.

## VI. CONCLUSION

In this paper we have learned about the technology of intelligent glasses and their types. We then briefly introduce the different paradigms. After that we also introduced the use of smart glasses technology in a systematic way. In this study it is clear that there are many interesting applications that can be used more easily with this smart glass than traditional computer devices.

It is expected that there will be significant investments in the research and development of smart glasses because the entertainment industry, educational businesses can benefit from smart glasses and there may be a huge demand for consumers in them in the coming years. However the model available today is very promising and it is possible that smart glasses may be part of our daily life for the future of the new generation.

Smart Glasses integrates computers, cameras, and sensors to provide additional real-world sensitivity. Smart glasses are created for many purposes. Smart Glasses Technology is becoming increasingly available. Smart Glasses has seen little success so far. In future among 2/3 people going to use smart glasses for better vision.

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