# SMART GLASSES

Visual impairment is the inability to see in a particular manner or sometimes at all. Globally, at least 2.2 billion people have a near or distance vision impairment.It can be mild which is fixed with simple glasses and some are severe which needs more advanced solutions and surgical interventions.

Rapid advancement in medical sciences is encouraging various innovative treatments for people who are visually impaired, but not everyone gets the opportunity for treatment. It is expensive and time consuming, apart from that is a specialized treatment which is not offered in every hospital. It is crucial to find alternatives to costly and complicated eye procedures and treatments.
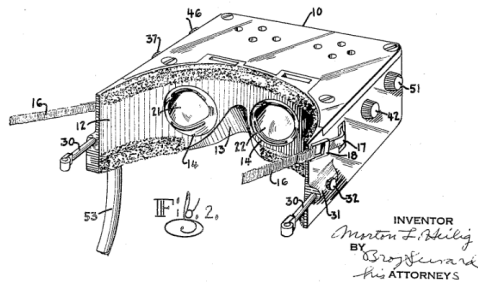

We have seen various devices worn in superhero movies which gives them power to see, feel. Those techniques are now not only seen in movies, innovators have made impossible things possible with their years of research and technology.

'SmartGlasses' is the eyewear technology that layers information onto a user's field of view, starting off as simple front-end displays. With years of innovation, SmartGlasses are capable of performing complex computer-powered tasks.

HISTORY:

Augmented reality dates back to the 20thC.However, The term augmented reality was coined by Thomas P. Caudellin the 80s.

In 1960, Morten Heiling also patented a stereoscopic television HMD for individual use. By many, this device is seen as the mother of all smart glasses, highlighting its importance (together with Heilig's Sensorama for VR) as a milestone in the history of computing.
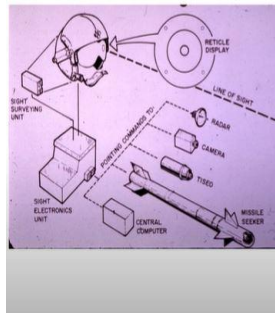
In 1961, Philco's Headsight-Remote Camera Viewing system came out. The helmet included a video screen and tracking system.

In 1968, Sutherland and Sproull developed the 'Sword of Damocles' that is the first augmented reality head-mounted display (HMD) and tracking system.

In the 1960ies and 1970ies, the US Airforce develops several versions of helmet-mounted displays (HMD) in aircraft to project data in front of pilots' eyes 1980ies, the concept of AR is picked up by the film industry, embedding the idea into the story line of works such as 'The Terminator' (1984), 'Robocop' (1987), and 'They live' (1988).

Philco Headsight (1961) – Remote Camera Viewing
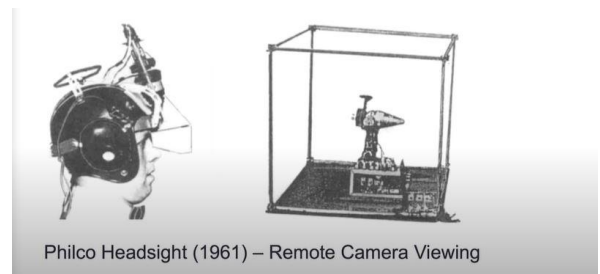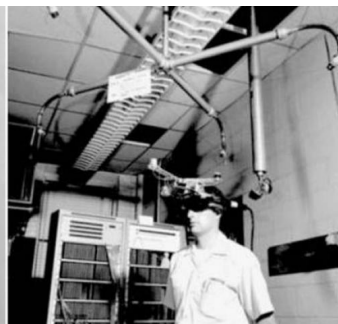
In 1992, virtual fixture was the first immersive Augmented Reality system in order to improve immersive experience.

In 1994, Azuma developed the motion stabilized display for outdoor use and it is marker-based tracking technology.

In 1996, UNC hybrid magnetic-vision trackers were developed. Simultaneously, The MIT wearable computing group founded by Steve Mann, experimenting with smart glasses, amongst others.
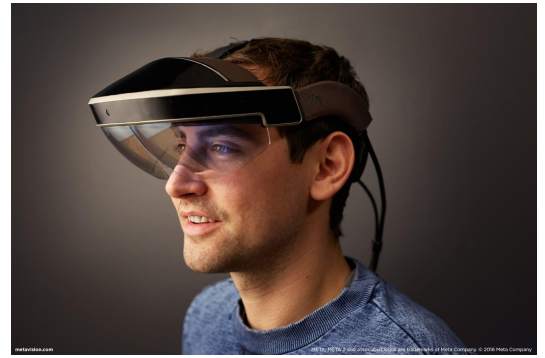
In 1997, the Turing Machine saw the light of day, a 3D mobile augmented reality system for exploring the urban environment.

In 2011, the first smart glasses were created by Google.

In 2014, DAQRI's smart helmet is a novel stereoscopic wearable device to see the real world overlaid with computers.

In 2014, Meta One started to ship the first high quality AR headset.

In 2015, Microsoft HoloLens was released. It is the first headset Augmented reality equipment with a self-contained Window 10 computer and depth mapping, a breakthrough in smart glasses technology.

The Magic Leap One AR glasses were released by Magic Leap on 8 August 2018. Magic Leap XR Plugin provides rendering and spatial mapping support for Magic Leap.

Early Experimentation	Basic Research (Tracking, display technology)	Tools & applications (Interaction, Ux, theory)	First commercial applications (Games, Medical, Industrial)	Smart Glasses on the rise (BT-200, Glass)	Spatial Computing takes off (Hololens / Magic Leap)
1960s – 80s	1980s – 90s	1995 – 2005	2005 –	2011 – 2015	2016 –

TIMELINE OF HISTORY OF SMARTGLASSES

INNOVATIONS

With years, smart glasses have evolved with the latest innovative technologies. Smart Glasses have made life easier for people with visual impairment.Although various smart glasses are available in the market currently, the focus on cutting down the cost is still a work in progress. Many People are still not able to access the technology available either due to lack of knowledge or the cost of the product. However, we believe that innovations and technology will make it possible for people to access the devices at affordable prices and under various programs, organizations, companies and nonprofits would come together to help people access the devices that better their life.

Here are examples of Smart Glasses that are currently available in the market and are innovated timely with upgrades to deliver the best experience for people.

NuEyes Pro

NuEyes Pro is a head-worn lightweight and wireless pair of smart glasses, which can be controlled either through a wireless handheld controller or a set of voice commands. It is designed to help visually impaired and legally blind see better.

Some of the features are:

- Lightweight head-worn unit mounted with a camera
- Adjustable magnification up to 12x
- 30-degrees field of view (FOV)
- Different color and contrast options
- Voice controlled
- Wireless
- OCR enabled

- Bar code and QR scanning options

IrisVision

IrisVision electronic glasses for the blind and visually impaired are a highly innovative assistive technology solution, which is registered with the FDA as a Class-1 medical device and is redefining the concept of wearable low vision aids.

Features:
- A magnified view to the user in the lenses

- Customizable magnification up to 14X. One of the widest field of views (FOV) at 70 degrees providing a more realistic experience
- User-friendly and customizable control settings for ease of use
- Special type of magnification : "Bubble View" technology, which offers an enhanced view of anything lying within the bubble, without losing the broader context of the surroundings.
- Boasts different viewing modes to cater for different types of visual limitations and use case scenarios; for instance, 'Scene Mode', 'Bioptic Mode', 'TV Mode', multiple reading modes and so forth
- 'IrisVision Assistant', enables a totally "hands-free" experience by responding to your voice commands or performing your desired actions
- 'Iris Reader' feature to read books, magazines or anything else you want to read.

Envision Smart Glasses

Envision Smart Glasses provides the most intuitive and easiest way to access all kinds of visual information around them. It's trained to recognise and speak out text, objects, people, colors, products.

The Envision Glasses are a combination of the Google Glass 2 and Envision's award-winning AI technology. The technology is currently available on iOS and Android smartphones. Like the app, the glasses use artificial intelligence to understand the world around you and speak the visual information back to you.
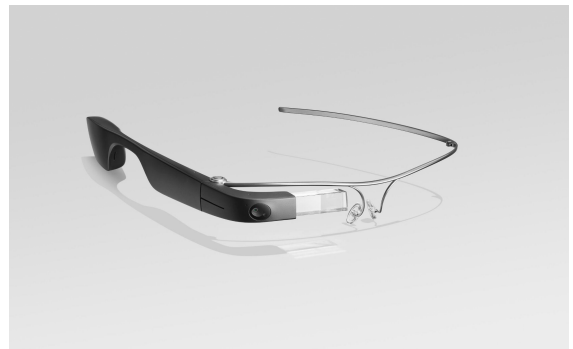
Features:

- Instant Text
- Scan Text
- Handwritten Text
- Describe Scene
- Detect Colors
- Find Person and Objects
- Explore
- Video Call