ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS INSTITUTION
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Department of Biomedical Engineering

VI Semester

CBM 370 - Wearable Devices

Unit- 1 INTRODUCTION TO WEARABLE SYSTEMS AND SENSORS

1.3 Types of Wearable System:

1. Fitness Trackers:

- A fitness tracker is typically worn around the chest, on the wrist, or ear.
- They capture the number of steps you have taken and added on much more. They also capture metrics like speed, distance, pulse, exhalation, calories burned, and sleep.
- Some fitness trackers allow you to upload data directly to your doctor.

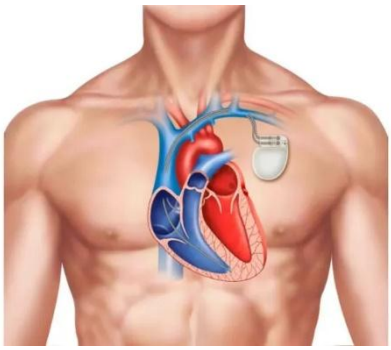
2. Head-Mounted Displays:

- Head-mounted displays are also referred to as virtual reality headsets or VR headsets. They may be referred to as VR glasses.
- It can act as a monitor or provide information that has been superimposed over reality. This is called augmented reality (AR).
- Can create a visual simulation that has built-in sensors to detect your movements

3. Implantables

- Implantables are wearable technology that contacts your body from the inside instead of the outside.

- ❒ Pacemaker and defibrillators are a type of implantable, wearable devices. They are typically recharged wirelessly, so additional surgery is not needed.



4. Smart Clothing:

- ❑ This includes a wide range of items from helmets, hats, socks, shirts, and more.
- ❑ This clothing is able to monitor the physical condition of a player during training, which can help improve performance and reduce injury.
- ❑ Smart clothing is also referred to as electronic textiles or e-textiles.
- ❑ One company considered putting a tracker in their clothing to determine how often a piece of clothing was worn.

5. Smart Contact Lens:

- ❑ Smart contact lenses can monitor for diseases such as cataracts, diabetes, and glaucoma. In addition, these contact lenses have been found to help with farsightedness or seeing up close.
- ❑ There are some smart contact lenses that can operate on solar power, capture images and videos, and are AR enabled.
- ❑ They can also store these videos. Smart contact lenses fall under the category of implantable devices.
- ❑ Most smart lenses use **wireless energy transfer** and ultra-low-power circuits.
- ❑ Some integrate tiny batteries or rely on harvesting energy from eye movements.

6. Smart Earbuds:

- Earbuds have been around for quite some time and have been Bluetooth enabled
- Smart earbuds have a compass, GPS, and gyroscope built into the earbuds.
- There are sensors in the earbuds that transmit information to a smartphone. This allows the phone to know your movement and direction.
- **Real-Time Language Translation:** Instant translation of foreign languages (e.g., Google Pixel Buds, Timekettle).
- **Voice Assistant Integration:** Works with Siri, Google Assistant, or Alexa for hands-free control.

7. Smart Glasses:

- They can be divided into two different groups. The first group of smart glasses is paired with a smartphone because you need a smartphone to see images.
- The other type is one that needs a wired connection to view images.
- Some smart glasses are enabled by AR, giving you an immersion experience. For example, you can read text messages and reply to them without your hands.

8. Smart Jewellery:

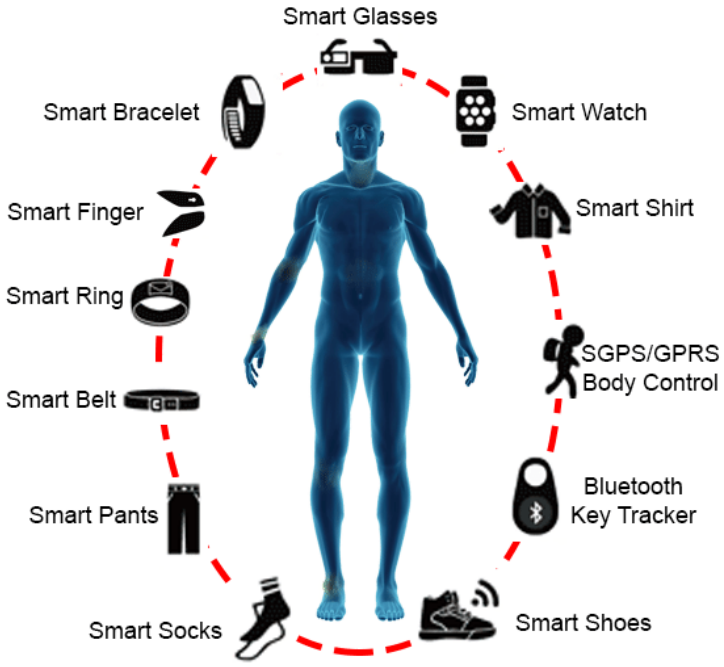
- This jewelry is a new way to track the health and fitness of the wearer.
- One of the most well-known smart jewelry options is a smart ring.
- It captures data tracking your health. This information can be reviewed at a later time on your smartphone.
- They can monitor your heart rate, sleep, and fitness and even alert you about an incoming phone call.

9. Wearable Camera:

- A wearable camera is well suited for individuals wanting to create pictures and photos in real-time.
- There are two different types of wearable cameras. The first type is a small camera that can be worn in the ear or on helmets.
- The other type is a larger version that needs an attachment to be worn.

10. Wearable Medical Devices:

- Has one or more biosensors that monitor multiple types of physiological data for the early diagnosis of diseases.
- This includes activity monitors, smart clothes, and patches to help collect relevant health data while using non-invasive device sensors.
- For example, a wearable medical device can track metrics for those that suffer from diseases related to high blood pressure or heart rate.



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