FUTURE OF WEARABLE TECHNOLOGIES

In the digital and technologically advanced era of the 21st century, technology is no longer only limited to devices and gadgets but has also penetrated the wearable and fashion market. With technological advancements, wearable technology has become a very commonly observable part of day-to-day life. Wearable technologies were not well known till a few years back but now have penetrated the market within recent years due to the comfort and ease it provide to the users.

Currently, wearable technologies are being used for health and wellness monitoring purposes but it has a large scope of development in it, with more advanced technology integrations.

What is Wearable Technology?

Wearable technology also known as wearables refers to any electronic or advanced computing device that can be worn or carried on the body. These devices consist of sensors, microprocessors, and wireless communications that are capable of computing, monitoring, processing, and analyzing data based on certain algorithms and commands that are fed into their memory on a prior basis. They can be integrated with ease within watches, jewelry, and even clothes to make the incorporation seamless and hassle-free.

A very common and well-known example of wearable technology is smartwatches. Smartwatches that most people today are using for monitoring their heart rate, oxygen levels, footsteps, water consumption, stress levels, blood pressure, sleep quality, etc., are also wearable technology. It monitors the functioning of our body based on pre-noticed parameters and gives us results. Fitness trackers and smart glasses are another very common and well-known example of wearable technology. But as we are moving into a diverse and more technologically advanced world, and as wearable technology is continuously evolving and improving, it is now also merging with textiles to produce e-textiles and clothes equipped with wearable technology.

Current Scenario of Wearable Technology

Earlier wearable technologies were not so popular but currently, wearable technology contributes to a large scale of both technology and the wearable market. Wearable technology has become so popular in recent years due to advancement and development in technology. Currently, the market of wearable technology is expanding immensely due to its comfortable nature and easy access. Apart from these wearable technology has also emerged as a symbol of class.

For example, a person wearing a smartwatch is seen as more elite and background if he is wearing the smartwatch compared to traditional wristwatches. Though this might not be correctly true, wearable technology has already penetrated our minds and psychology as a symbol of richness and eliteness when compared with normal wearables.

The reason why wearable technology has been so popular lies not in the fact that it has been manipulating our psychology in thinking and building a sense of fake eliteness but also in the trends and changes it has made in people's lives.

The reasons for exponential growth in the wearable technology market in recent few years are -

Technological Advancement: In recent few years there has been significant and drastic growth in the area of technological research and advancement. These technological advancements are the sole reason for the development of wearable technology. The introduction of wireless communication, microprocessors, and sensors has had a significant impact on the development of wearable technology.

Downsizing of Components: With the advanced technology, the size of components like sensors, processors, and wireless devices has been minimized which has greatly boosted wearable technology development. The shrunken size of computing units has led to decreased cost and more affordable wearables thus, making it easily accessible to a larger consumer population.

Better functions and capacity: With evolved technology and miniaturization of components, wearables have become more convenient and capable. Additionally, with expanding technology the wearables are now available with internet connectivity to connect them with phones for pop-up notifications and access to a wide range of apps on the wearable itself. Further, with the introduction of Augmented Reality technology, it has also become possible to use wearables for visual projections.

Future Trends of Wearable Technology

The future of wearable technology seems to be a very prosperous and expanding market due to its high demand and seamless integrations.

Introduction of Artificial Intelligence and Machine Learning:
Wearables like smartwatches and fitness trackers can be integrated with Artificial Intelligence and Machine Learning for better results. Wearables are currently being used to monitor, process, and analyze data related to health like sleep cycle, blood pressure, oxygen level, and heart rates. The incorporation of AI and machine learning with the wearables can help to improve the efficiency of the results and can also be used to suggest the best measures to undertake to improve the health and wellness of the human body.
Advanced Materials and Design:
With advancements, wearable technology can be shaped into more convenient and better devices. The technology of wearable devices can be integrated to produce soft and flexible wearables. Also, e-textiles can be developed by blending the technology with clothing for better comfort and durability.
Enhanced Connectivity:
With the great development of new connectivity like 5G technology and IoT (Internet of Things), the communication and connectivity of wearables can be improved. The connectivity range of wearables can be expanded from a few meters to even kilometers and far or it can be done worldwide like internet connectivity.

New Application Areas

Currently, wearable devices are only used for tracking and monitoring basic body functionality but with enhanced technology, these wearables can be used on a larger scale. They can be used to predict health conditions, and diseases beforehand and can also help to monitor them and can provide personalized treatments that are customizable depending upon body type and people.

Augmented Virtual Reality:
With Augmented Virtual Reality, wearables can enhance the experience of gaming, and movie watching and can even improve the remote working experience by creating a virtual reality according to the decided theme and instructions.

Enhanced Housing Experience:
Apart from this wearables can be used to improve the home experience by integrating smart home technology with wearables where smart homes and offices can be operated through wearable devices.

Health Care:
The wearables can be used for many other purposes like health forecasting, and energy-harvesting and can even be modified to interact and learn from user behavior and actions. These wearables, if integrated with more advanced technologies of Artificial intelligence and Machine Learning, might also help us to predict the disease, based on the data it is capturing continuously and analyzing with the big data.
In the health care sector, it may also be modified to suggest corrective measures and health care techniques or prevention actions if a person is suffering from a particular disease. It can make decisions based on the captured data and suggest the best possible solution.

Problem-Solving:
The wearables if integrated with artificial intelligence can be used to act as a stop solution to worldwide problems. It can be inserted with intelligence which can think independently, analyze all the knowledge around the world and give a proper solution to a particular problem if asked. It can be wired to work as a human brain.

Brain Computer Interfaces:
Wearable technology can be developed and taken to the next level if it can be controlled by the human brain. It can be inserted with technology that can be controlled by the mind or can be psychic. This can open new paths in the world of science, technology, biology and psychology.

Payment Methods:
Apart from these, wearable technology can be incorporated with payment technologies to ease payment methods. Today we all are using online payment methods to make our day-to-day transactions. The wearables can be merged with online payment methods to ensure more convenient and easier payment methods.

Smart Glasses:
Smart glasses can be used for a wider vision area. Simple glasses can only correct vision but smart glasses can be used to record whatever is going in front of the eyes and store it in the memory as data which can be used later on when required just like photographs and videos. They might also be occupied with the technology to forecast whatever is in front of their eyes by blending wearable technology with online social media platforms.

Challenges and Considerations in Wearable Technology

Though the wearables look all good and seem to make our lives easier and better there are always two sides to the coin. With all the positivity and ease of doing things it brings to our lives, it also brings a darker part of life that also needs to be considered before reaching any conclusions.

- Though wearables are next-level and upgraded versions of technology, miniaturization of components without compromising the efficiency of the components is a major challenge in the wearables especially when we are talking about incorporating wearables into the clothing and developing e-textiles. Also, the battery and life of wearables is another major considerable challenge.
- Wearables in the future might be used to manage a lot of personal and confidential data. This raises a major concern for data security and information breaches. Data security robust encryption and prevention from any malware attack or hacking a big issues. The sensitive information needs to be secured with fireballs and advanced security options to prevent data breaches, cyber-attacks, and cyber frauds but this is a difficult task as the small size of the device might not be able to incorporate such advanced mechanisms within it.

- The user experience and comfort are the top reasons why wearables become so famous and easily blended into the market. Wearable technology was able to get so famous in a short time frame due to the comfort and experience it provides to the users and the aesthetics it brings to the overall personality. While advancing wearables it is important to keep a note of user experience and comfort and aesthetics it builds to user personality. It is not impossible but is surely difficult to uphold the quality of wearables and aesthetics at the same time without compromising the price because increased prices might restrict the wearables to only a small proportion of consumers.
- Additionally, it is also important for wearables to have universal standards to make their user experience and working experience identical in different environments, ecosystems, and platforms.

If these concerns are not tackled thoughtfully, they might impact the popularity of wearable technology. People might not be too interested in wearing wearable technology due to fear of privacy breaches, cyber-attacks, frauds, laws and regulations, and data breaches. Apart, not being able to utilize the full power of wearable technologies can also impact popularity. People might get frustrated at the fact that they have a powerful thing in just their reach but they can not access its full power.

Conclusion:

Wearable technology has opened up a new scope of technology expansion and has emerged as next-generation technology after computers. Wearable technology has penetrated the market in a short time due to the ease and comfort it provides. Technology has been a boon and sector changing in the field of health and fitness. For many wearable technology has a life-changing experience due to its ease of use but at the same time, the dark side is always there. As said every good has something bad in it, and so is wearable technology. Even after considering the different factors and calculating the cons and pros of wearables, wearable technology has significant advantages. With more advancements and technological expansion, wearables can overcome its lacking areas and might emerge as top technology in the next few years.