Wearable Technology Novel innovation in interactivity

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Abstract

There are various technologies and products available in the market that efficiently helps the human being in various ways spanning from desktops, laptops, electronic calculators, PDAs.etc.But the innovation haven't stopped to envision human need more efficiently, giving rise to a novel concept of "Wearable technology" which has changed many concepts of product development disruptively. The main focus of wearable computing is that these devices can be carried anywhere and they take active participation in human activities. It refers to electronic technologies that are incorporated into items of clothing and accessories which can comfortably be worn on the body. These wearable devices can perform many of the same computing tasks as mobile phones and laptop computer, however, in some cases; wearable technology can outperform these hand-held devices entirely. Wearable technology tends to be more sophisticated than hand-held technology on the market today because it can provide sensory and scanning features not typically seen in mobile and laptop devices, such as biofeedback and tracking of physiological function. The purpose of wearable technology is to create constant, convenient, seamless, portable, and mostly hands-free access to electronics and computers.. One view is that we will more easily accept wearable technology if it's incorporated within things that we are already wearing so we is just adding technology to an existing wearable e.g. jewellery and fashion.Wearable technology potentially has the most impact in the fields of health and fitness, the technology also promises great influence on gaming and entertainment. Augmented reality and wearable technology can combine to create a much more realistic and immersive environment in real time.As the potential uses in various fields continue to grow, the sociological and cultural impact wearable technology will have in the future should not be minimized. Already, the current hand-held devices available to consumers, such as Smart Phones, iPods and tablets, have changed the technological and social landscapes on a global scale, such that, walking out in public and seeing an individual engaging with a hand-held device is commonplace. Such an image was nonexistent only 20 years ago. With that in mind, developers and analysts predict that wearable technology will very quickly change the technological and cultural landscapes once again, and may even change the nature of mobile phones and other hand-held devices entirely.

Introduction

Imagine a world where everything is smart and connected, a world where every product from washing machines to light switches, pacemakers to hospital gowns, wristwatches to running shoes can provide useful data that make our lives better and easier, where thousands of wireless sensors networks help optimize crop planting and irrigation, monitor avalanche and forest fire conditions, regulate city water systems and automobile traffic. That's the world of the Internet of Everything (IoE). And it's coming faster than most people think.Innovation is the buzzword today and a group of innovators/entrepreneurs in the field of media, technology and communications has developed products which may be considered mundane into smart ones with the intelligence to provide with inputs which have the potential to change your day-to-day life. Wearable Technology, having immense potential of growth in the coming years. Wearable Technology is the incorporation of matching new computerised technology into everyday fashion. It is a computer that could be worn on the body ranging from a small wrist mounted system to a bulky head mounted display or bare necessities like shirt, watch, glasses . These computers are especially useful for applications that require computational support while the user's hands, voice, eyes, arms or attention are actively engaged with the physical environment. It helps in obtaining Information about the surroundings or about one self.

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Evolution of Wearable Technology

Wearable technology devices are exploding onto the market with everything from smart glasses to smart watches on the rise. As for smart watches, the technology is new holds back its history starting back in the 1970s with the release of the first calculator watch. The calculator watch was first released in 1975 under the Pulsar brand became a widely popular tool for science geeks and math nerds everywhere. The dwindling popularity of the calculator watch can be foretold by the introduction of PDAs, smart phones and other technology products.

While the 1970s saw the production of the first modern era wearable computers, the history of wearable technology may go back even farther. The first wearable computer may have been introduced as early as the 1600s, when the first abacus necklace was unveiled. Other early wearable computers include a sixteenth-century abacus ring, the first wristwatch worn by the Queen of Naples in 1810.

In 1961, mathematicians Edward O. Thorp and Claude Shannon built computerized timing devices to help them cheat at the gambling game roulette, one concealed the device in a shoe, while the other in a pack of cigarettes. Various versions of this apparatus were built in the 1960s and 1970s. Along with the early wearable calculator watches in the 1970s, came the introduction of a wearable system for the blind published by C. C. Collins in 1977.In the 1980s, wearable computers started becoming more general-purpose and better fit the modern definition of "computer" by incorporating task-specific hardware to more general-purpose devices. In the wearable computer field through the 80s led Steve Mann to create the first wearable wireless webcam in 1994, which became the first example of "lifelogging".As the world moved into the 21st century, wearable technology started to take off. In 2002, Kevin Warwick invented wearable necklace which changed color according to nervous signals given by the person using it. Approaching the 2010s, wearable devices started moving toward incorporating Bluetooth technology and many more leading to more various interfacing network categories. For example Google Glass and Google explorer and similar other categories of product in 2013 changed in the interfaces about wearable technology to an exponential level.

Significant Outcomes in Wearable Technology Health Care Sector

ShoeSense , a shoe technology project lends a new perspective to hand gestures and wearable applications. It is a wearable system comprising a shoe-mounted depth sensor pointing upwards towards the wearer for different functions such as standing, walking, running, cycling, climbing stairs, calculated the number of calories burned during these exercises, measured a total of 13 different data points while running, converted the energy from running into usable electrical energy enough to charge a smart phone and many more to quote.A bluetooth enabled shoe insert that hooks up with Google Maps and buzzes to let us know when to turn on your chosen route. The shoes apply haptic feedback to guide the wearer at the right turn to meet up with friends or to get wherever they need to be. It can be used for hands-free biking, hiking, walking and while driving as well.Smart shoe with sensors and microelectronics integrated into the sole that measure the biomechanical data of the athlete and evaluate the runner's form with the help of measurements in real time. A smart insole with which you can track the location through any smart phone, tablet or web browser and set up text and e-mail alerts if they leave or enter defined areas on a map.

Education Sector

In education can wearable technologies have impetus significance is a note flying under the radar. New wearable technology innovations have transformed the learning and teaching process in which students deal with knowledge in an active, self-directed and constructive way. As an educational tool, wearable technology can help children exercise their creativity and innovation and interact with their surrounding in an easier and a more natural way.

It provides opportunities for students to learn more quickly and access information with less effort or mental input. It is important to keep in mind that using wearable technologies in teaching and learning process is very different from the traditional learning experience where students come to class at a fixed time and location. Teachers should learn how to manage effectively the new learners and how to use effectively wearable technologies in an educational setting. These technologies can be used in education to develop student's skills for cooperation, communication, problem solving and lifelong learning.

Some examples of wearable technology that can be used in education are Autographers, Keygloves, Muse (Brain-sensing headband), Virtual Reality (VR), Smart Watches, GoPro, and Google Glass.

The **Autographer** helps students to capture photos of the teacher's direct notes. So, they will always have exact information from their teacher. It is a new type of camera which has been custom built to enable spontaneous, hands-free image capture. Its world leading technology includes a custom 136° eye view lens, an ultra small GPS unit and 5 in-built sensors.

These sensors are fused by a sophisticated algorithm to tell the camera exactly the right moments to take photos.

Keygloves are wireless open-source input glove that can provide flexibility and convenience for gaming, design, art, music, data entry, device control, 3D object. This device can also facilitate singlehanded tasks and is perfect for handicapped or disabled users.

Muse, a brain sensing headband can display students' brain's activity directly onto a smart phone or tablet. When students are working on a project or studying for an important test, for instance, it can be used to measure their brainwaves and detect what activities they need to be active in and can help their mind stay focused and less stressed out.

Virtual Reality (VR) gives students an opportunity to get hands on experiences and increases their knowledge. It can present complex data in an accessible way to students which is both fun and easy to learn. Students can interact with each other as well as they can interact with the objects in that environment in order to discover more about them.

Smart Watches are able to provide information and remote applications like camera, fitness applications and games, tools applications for measurements and calculations for students. All of the facilities afforded by smart phones are squeezed into Smart watches. Utilization of smart watches in education is been found that this technology can enhance learning outcomes and allows students to access education flexibly, calmly and seamlessly.

iPod technologies is as an effective learning tool can empower students to think more creatively about their subject matter and encourage the development of collaborative learning. Hence, it gives a sense of self-empowerment and autonomy to the individual.

GoPro is an interesting and unique camera that has the ability to capture students and teachers' view of events, to record instruction, and to explore novel possibilities and helps teachers to examine their students' behaviours and to make more informed pedagogical decisions.

Another awesome innovation is **Google Glass** a web connected wearable computer connected to a micro computer can help display voice and information on the screen. Through it teachers and students can share information in various modes of interaction by using this technology. It can be integrated with simulation based learning exercises for students increasing their learning capacity. It can also help revolutionize medical education which will allow students to watch medical procedures in real time.

In the case of higher education, wearable technology is a natural fit. Not only does it enhance a student's ability to better interact with their environment, they can more easily access information and resources.

In the future there will be a tiny log of everything that is happening, good or bad, so we will be able to take control of our health and wellness in a much more powerful way. The wearable devices are that not only do they collect our data, but they change our behaviour. They offer constant, tiny amounts of feedback that we can act on. There are subtle things that we've never been able to capture; once we can monitor those, we can live smarter lives.

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