Wearable technology for Healthcare

Abstract

This paper will look at wearable technology for healthcare. Applications of wearable technology will be discussed portraying the potential in the future of ‘wearables’. In conclusion, it is stated that wearable technology will significantly improve healthcare. ‘Wearables’ can aid in the monitoring and collection of data over a period of time while being unobtrusive and discrete.

Introduction

The development of technology has changed our lives. Technology continues to improve and evolve (Tao 2005). Healthcare has now become another aspect that is influenced by technology. Wearable technology for healthcare consists of “miniature sensors that can be unobtrusively attached to the body or can be part of clothing items, such as sensing elements embedded in the fabric of garments” (Bonato 2005). This provides data from a subject in a location where the results are going to be the most accurate, i.e. the home and the community.

Literature Review

Wearable technology is a state of the art technology. Google Glass is at the forefront of wearable technology. This device is “worn like conventional glasses, but combines a computerized central processing unit, touchpad, display screen, high-definition camera, microphone, bone-conduction transducer, and wireless connectivity.” The Division of pediatric surgery of New York Medical College operating in Maria Fareri Children’s Hospital of Westchester Medical Center obtained a Google Glass device. They tested “its applicability in our daily pediatric surgical practice and in relevant experimental settings.” In conclusion they believe that there is use for wearable technology in a hospital. They can see potential to improve the efficiency of the daily routine of medical practitioners. However, the current design and performance is not at a level that means this technology can be commercialised. (Muensterer et al., 2014).

Traditional methods used to measure heart-rate include attaching electrodes to the chest of the patient for the best results. With the advancements of wearable technology it is now possible to measure one’s heart-rate wearing a discrete and inconspicuous device. The Media Lab of Massachusetts Institute of Technology and the school of Interactive Computing of Georgia Institute of Technology conducted experiments to test the ability of the Google Glass to measure heart-rate. “In summary, this work has shown a new capability to provide accurate real-time heart-rate and respiration
measures from a gyroscope worn above the eye, and using a combination of sensors available in today’s head-mounted wearable Google Glass.” “With the continuous technological improvements and commercial reach of new devices, we expect our results will help facilitate non-intrusive access of meaningful physiological information during daily activity.” (Hernandez et al. 2015)

The potential of wearable technology can be seen in this example. The laboratory of the Ohio State University Division of Cardiovascular Medicine and Heart & Lung Research Institute have preliminarily shown that patterns of “diurnal variability in heart-rate variability may indicate specific times of day that a patient may be more responsive to a given therapeutic intervention and thus provide essential information directing the optimal timing of effective drug administration.” (Binkley et al. 2003). This information is only available through the monitoring of a patient for an extended period in an environment where they are comfortable. Wearable technology makes this possible.

Conclusions

From my research, it is clear that wearable technology can significantly improve healthcare. Wearable technology is designed to be discrete yet practical. Wearable technology can be applied to any aspect of healthcare where monitoring and collecting data is needed. More research needs to be done to improve the technology behind wearables so that they can be commercialised and save lives and money.

References


