**MODERN AGE SUSCEPTIBILITY OF COMPACT WEARABLES: AN ANALYSIS**

Smriti Panda1, Anushka Khare2, Dr. Deepanjali Mishra2,3

Email ID: deepanjalimishra2008@gmail.com

**Abstract**

The recent advancement in the digital era has seen a rise in motivation to innovate devices that make the job less tedious and promote sustainable alternatives. Compact wearables in modern day depend solely on micro-sensors that help advance complex technologies for user convenience. Hence, we will be discussing the applications of wearable devices such as Recovery tracking/Rehabilitation monitoring, alerting health problems, fitness and sports ( i.e. measuring pulse and step count), early detection of disorders, e-textile and smart fabric industry, transportation(GPS tracking), finance and even in the military.

Living in a tech-driven, continuously advancing world with versions of compact devices loaded with a high amount of data requirement, ensuring proper security is a necessity.

The focus is expected to be on the major ingredient of making these devices a reality which are sensors. These are the tiny systems(mechanisms) that aid wearable computing and transmitting data through NFC, Wi-Fi or Bluetooth networks. In fields such as corporate, medicine, etc we will discuss in this paper how these wearable gadgets, loaded with efficient sensors, reduce the workload on personnel and provide more accurate and feasible solutions. Having explored these areas, we would finally extend our research to the vulnerabilities accompanying these gadgets, address the major threats to our security and pose realistic approaches, preferably by centralized privacy preservation to overcome these issues.

Proposed hypothesis includes altering the existing sensor security technology such that it adheres to the sensitivity of users and strengthens its walls hence preventing any breach of privacy and data mishandling. The proposed hypothesis is also a unique approach to an existing problem which has not yet reached its highest efficiency. Hence, it focuses on the newest methods to fix already discussed problems related to vulnerabilities that accompany wearable sensors. We hope to achieve a technology that not only benefits the users but also is ecologically friendly to safeguard our environment and maintain a sustainable relationship between nature and technology.

Vision of this research is to assist mankind in tackling this sensitive and complicated issue. Thus, this research would help achieve the goal of reducing security threats and provide a safer user experience.

The objective of this research paper is to identify the different procedures and mechanisms that involve sensors in wearable technology, their application, and also analysing the extent of wearable devices being susceptible to malicious attacks or threats in security and privacy as well as proposing possible solutions for minimizing vulnerability. Looking at a broader perspective, the research would impact individuals and the society they live in, as well as organisations they belong to. It would lead to a secure lifestyle promoting awareness and positive experiences while using gadgets aimed at easing their day-to-day activities.

Summing everything up, this paper would draw attention to the making and breaking point that our society revolves around today, i.e., safeguarding our privacy. We would try to propose these solutions as a driving force to make complete security a reality through incorporating modular changes in the most used wearable sensor devices.

Keywords: Sensors, Wearable Devices, Privacy, Security, Vulnerabilities, Data

**References**

[1] [https://www.arrow.com/en/research-and-events/articles/five-common-types-of-security-sensors-in-modern-security-devices](https://www.arrow.com/en/research-and-events/articles/five-common-types-of-security-sensors-in-modern-security-devices%20)

[2] Ching, Ke & Mahinderjit Singh, Manmeet (Mandy). (2016). Wearable Technology Devices Security and Privacy Vulnerability Analysis. International Journal of Network Security & Its Applications. 8. 19-30.10.5121/ijnsa.2016.8302. <https://www.researchgate.net/publication/303870892_Wearable_Technology_Devices_Security_and_Privacy_Vulnerability_Analysis>

[3] Patel, S., Park, H., Bonato, P. *et al.* A review of wearable sensors and systems with application in rehabilitation. *J NeuroEngineering Rehabil* **9,**21 (2012). <https://doi.org/10.1186/1743-0003-9-21>

[4] O. Arias, J. Wurm, K. Hoang and Y. Jin, "Privacy and Security in Internet of Things and Wearable Devices," in IEEE Transactions on Multi-Scale Computing Systems, vol. 1, no. 2, pp. 99-109, 1 April-June 2015, doi: 10.1109/TMSCS.2015.2498605.