

J-BHI Special Issue on “Innovations in Wearable, Implantable, Mobile, & Remote Healthcare with IoT & Sensor Informatics”

Wearable, implantable, mobile, and remote healthcare have rapidly entered the era of digital health across various IoT applications such as monitoring, recording, and tracking the key signs of people's health to improve their lifestyle and health disorders. Innovations in IoT devices play a vital role in assisting patients in managing their health conditions. Thanks to the advent of modern communication technologies and Internet of Things (IoT) paradigms that have made the implementation of biomedical devices nearly universal. Now with the evolving industrial revolution, patients and healthcare providers are expecting something more. Practically speaking, healthcare wearables have experienced tremendous growth in the past few years, and it is expected to grow even more shortly, making it an ideal space for the biomedical informatics research community to solve complex healthcare problems and more informed-decision making to improve human health. One of the most renowned applications of mobile healthcare technologies includes implantable devices. Wearables are generally used for preventative and recreational wellness management. Simultaneously, implantable techniques are applied towards the management of chronic conditions (blood pressure, diabetes).

Furthermore, in the current scenario of the COVID-19 pandemic, research on wearables and connected healthcare is more important than ever, as it greatly assists the patients with chronic conditions and other individuals to monitor their health without having direct contact with the physicians. Thus, effectively preventing the spread of a pandemic situation and acting as a lifeline to the end-users. Despite the vast benefits of wearables and mobile healthcare technology and sensor informatics, its real-time growth is hindered due to various barriers. Some of the typical challenges include higher cost, complexity in access to wearable device data, medical errors, privacy, security, and network connectivity concerns. Looking forward towards the path of wearable, implantable, and mobile health monitoring systems, IoT and sensor informatics technologies such as distributed machine learning and 5G networks play a prominent role. It adds an increased level of convenience to the end-users that they never experienced before by enabling efficient organisation and analysis of the health records to improve patient health outcomes. In short, this is a very diverse research area. The new wave of technological innovations in IoT and sensor informatics will lead to a multidisciplinary approach that ranges from vital sign and activity monitoring to dealing with emergency situations. More than ever, advanced research on this background paves the way for an efficient healthcare integrated technology that is both simple and trustworthy to be used in real-time. Hence, we can conclude that the future of healthcare applications will create a breakthrough through advancements when they effectively implement innovative IoT and sensor informatics paradigms.

This special issue invites submissions that solicits research on designing, developing, and assessing innovative sensor informatics tools and algorithms for remote and electronic healthcare and well-being. The major scope is to apply innovations in informatics and data analytics in the practice of remote healthcare and patient monitoring. The key objective is to improve remote healthcare outcomes and services and fulfill the unique application needs of the end-users (ease of use, precision healthcare, safety, privacy, trust, etc.). Suitable submissions that discuss system advances, techniques, and approaches relating to health informatics and IoT healthcare device analytics are most welcomed. We particularly encourage interdisciplinary and applied research in this stream. Topics of interest include, but are not limited to:

- Enhancing healthcare and social well-being with IoT assistive wearable, implantable, mobile, and remote healthcare informatics
- Future of healthcare informatics with big data and artificial intelligence
- Machine learning secure and privacy preserving data analytics solutions for emerging wearable and connected healthcare systems
- New advancements in distributed machine learning techniques for remote healthcare and personal monitoring
- Advances in federated learning and cloud computing for mobile health applications
- Emerging trends in big data and machine learning for decision support in healthcare and risk analysis
- Challenges in adopting wearable healthcare informatics and its adaptive measures
- Prospects of user-centred artificial intelligence in wearable, implantable, mobile, and remote healthcare informatics
- Advances in IoT assisted wearable sensor technologies and its impact on healthcare informatics
- Novel applications of IoT and Big data analytics to enhance user experience and evaluation methods for healthcare applications
- Role of IoT assisted innovative artificial intelligence (AI) and machine learning (ML) technologies in interactive healthcare applications (speech summarization, dialog management, etc.)
- Innovations in IoT and sensor informatics for monitoring patients with chronic health conditions
- IoT and sensor informatics in healthcare: Trends and future directions

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