

IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS

J-BHI Special Issue on “Contactless Human Sensing using Wireless Signals for Personalized Biomedical and Healthcare”

Wireless sensing technology utilizes electromagnetic waves to perceive human individuals, providing accurate and comprehensive human-related information for fields such as medical diagnosis and biological research. It offers new possibilities for early disease diagnosis, treatment monitoring, and health assessment, addressing fundamental and critical issues in biomedical and related fields. Meanwhile, with the gradual implementation of Integrated Sensing and Communication (ISAC) in the fifth-generation-advanced (5G-A) and sixth-generation (6G) multi-functional networks, using wireless signals, especially cellular signals, for contactless human sensing will become a general trend. Furthermore, the radio communication division of the International Telecommunication Union (ITU-R) has recently adopted ISAC among the key usage scenarios for IMT-2030/6G, making wireless human sensing technology more indispensable in the coming 6G era. While current wireless human sensing has made significant strides, there is still some way to go before its ubiquitous application and promotion. Some emerging applications for personalized biomedical and healthcare, such as integrated wireless human sensing with telehealthcare, integrated communications and wireless human sensing, as well as privacy and security issues in wireless human sensing, are also essential.

The main objective of this Special Issue is to address the unique challenges of wireless human sensing for personalized biomedical and healthcare, and to bring contactless human sensing technique closer to reality. It will focus on various theoretical and practical research on human sensing using wireless signals, aiming at bringing together researchers, industry practitioners, and individuals working in related areas to share their new ideas, latest findings, and state-of-the-art results. Ultimately, this special issue will provide a comprehensive tutorial of the state-of-the-art wireless human sensing technologies for biomedical and healthcare.

Topics of interest include, but are not limited to, the following:

- Wireless human motion recognition approaches for personalized biomedical and healthcare
- Human imaging based on wireless signals for biomedical and healthcare
- Applications of artificial intelligence (AI) for wireless human sensing
- Human vital-sign (e.g., heartbeat and respiration) sensing for biomedical and healthcare
- Multi-source signal integration for contactless human sensing
- Human sensing datasets based on wireless signals for biomedical and healthcare
- Integrated wireless human sensing with telehealthcare
- Integrated communications and wireless human sensing for 6G
- Information security in personalized biomedical and healthcare based on wireless human sensing
- Experimental demonstrations and prototypes of wireless human sensing for personalized biomedical and healthcare

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