

# IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS

**J-BHI Special Issue on “Smart Sensing for Cardiac Health Monitoring and Heart Attack Prevention”**

Cardiovascular diseases present a growing burden to society. Especially, atrial fibrillation and heart failure are expected to increase enormously in the coming years, and pose a challenge to cardiovascular disease management. Innovations in smart sensing and biomedical technology enable us to monitor the cardiovascular system with implantable or wearable sensors more accurately and continuously. This generates many unanswered questions, for example: Which sensed parameter will have the greatest impact on disease prediction and outcome? How can we best use the enormous amount of data generated by such sensor systems? Clinicians face the challenge of determining how to distill the most relevant information from the big data for medical diagnostics and prognosis.

Heart rate assessment, as well as heart rate variability parameters, are computed in real time directly on sensors, and thus only a few parameters are sent via wireless communication for power saving. Hardware and software methods are available for heartbeat detection and variability calculation, based on sensors data. With an autonomy of 48 hours of active measurement and a Bluetooth Low Energy radio technology, these types of sensors will form a part of a wireless body network for the remote mobile monitoring of vital signals in clinical applications—requiring automated collection of health data from multiple patients. New sensor technologies in wearables and other consumer health devices are opening promising opportunities to collect real-world data. As cardiovascular diseases remain the number one reason for disease and mortality worldwide, this biomedical technology now offers big opportunity for assessment of patients in hospitals, as well as in their out-of-hospital daily routines. It has become important area for research in recent years. Therefore, the aim of this special issue is to investigate the status quo of studies on the monitoring and medical assessment of patients with cardiovascular risks and patients suffering from cardiovascular diseases in a telemedical setting, by using not only smartphone-based apps, but also consumer health devices such as wearables and other sensor-based devices.

This Special Issue is created with an interdisciplinary approach, involving topics that cover (i) the main features in the field of cardiovascular sensors, and (ii) biomedical engineering analysis of this data for cardiac diagnostics and prognosis. We hope the high-quality research in this important field will have an impact on future disease management, and also hope to bring together a collection of both original research and review papers that cover modern technologies in all aspects of cardiovascular illnesses and heart attack prevention by using sensors and equipment. The special issue devoted to this topic will make significant contributions to the rapidly growing field of novel and innovative smart sensors for cardiovascular disorders and heart attack prevention. It will have a positive impact on the domain knowledge and practices for improving people's quality of life.

Potential topics include, but are not limited to:

- Smart wearable devices in cardiovascular care
- Biosensors for cardiovascular monitoring
- Rehabilitation applications for healthcare
- Sensors in cardiovascular implants
- Design and micro-fabrication of implantable cardiovascular sensors and instrumentation
- Advanced modalities for powering cardiovascular implantable sensors and devices
- Applications of printable/stretchable electronics in implantable cardiovascular sensors
- Biosensors and randomness for secure application systems
- Computational modeling approaches for biomedical engineering simulation, healthcare optimization, and medical prediction

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## Key Dates

Deadline for Submission: 31 Aug, 2023

First Reviews Due: 05 Oct, 2023

Revised Manuscript Due: 05 Nov, 2023

Final Decision: 05 Dec, 2023