

Smart Sensors and Computing: Intelligent Systems for Healthcare and IoT Applications

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The rapid evolution of smart sensors, intelligent computing, embedded systems with Internet of Things (IoT) and wireless communication technologies, and continues to reshape the way we monitor, analyze, and interact with the physical world.^[1-3] Also, now days, the convergence of these technologies with artificial intelligence, machine learning is enabling innovative solutions across healthcare, industrial automation, smart infrastructure, and environmental monitoring.^[4,5] As these technologies advances, interdisciplinary research remains essential for translating scientific advances into practical, scalable, and impactful applications.

The *Journal of Smart Sensors and Computing* (Volume 2, Issue 2) consist of four research articles that are from rapidly growing field, with research spanning digital healthcare, biomedical data analytics, wearable health technologies, and large-scale wireless IoT networking.

In the present issue, Mapari *et al.* presents an affordable smart digital stethoscope designed to acquire heart sounds through real-time capture and processing into data that can estimate the heart rate (BPM) and classify heart sounds using machine learning algorithms. The system uses a modified KY-037 sound sensor and an external electret microphone to acquire heart sounds in real time, produce waveforms of heart activity, allow the estimation of heart beats per minute (BPM) via a machine learning classification system based on the features of the sound signal, and are visualized using the Streamlit web application.^[6]

Yadav *et al.* proposed a hybrid LASSO-WOA (hLWOA) feature selection model for thyroid disease classification that effectively reduces feature dimensionality while maintaining high predictive performance. By reducing the feature set from 25 to just 4 informative features, the proposed approach achieved an accuracy of 99.29%, improving model interpretability, reducing computational complexity, and enhancing classification efficiency for intelligent clinical decision support.^[7]

Matri *et al.* designed HerEase, a smart wearable therapy belt that supports menstrual pain management and personal hygiene. The device integrates heat therapy, vibration therapy, moisture monitoring, and wireless connectivity into a comfortable, user-friendly design, demonstrating the potential of wearable technologies to enhance women's healthcare. The wearable device consists of a heating pad to relieve menstrual cramps through controlled heat therapy, a vibration motor to enhance the

comfort, and a moisture sensor that monitors pad saturation and provides timely user alerts. The study demonstrates that a simple sensor-based control system can deliver reliable, energy-efficient, and user-centered healthcare support.^[8]

Sayyed *et al.* presents a complete end-to-end hardware implementation and experimental validation of a Wi-SUN FAN network using a Raspberry Pi Compute Module 4 (CM4) Border Router and a custom EFR32FG28-based leaf node operating in the Indian Sub-GHz frequency band. To evaluate the practical applicability of Wi-SUN FAN, the authors implemented and analyzed three real-world IoT use cases: crop health monitoring through compressed image transmission, smart streetlight monitoring using energy consumption and status reporting, and industrial equipment monitoring through vibration, temperature, and acoustic sensing. The study demonstrates the versatility and scalability of Wi-SUN FAN for supporting reliable, low-power communication across diverse outdoor IoT applications.^[9]

In conclusion, this issue reflects the integration of intelligent sensing systems, IoT, and AI-driven methodologies across diverse application domains. Together, they emphasize the significance of interdisciplinary research in advancing innovative, efficient, and scalable solutions for real-world challenges in healthcare, industry, and smart infrastructure.

Conflict of Interest

There is no conflict of interest.

Artificial Intelligence (AI) Use Disclosure

The authors declare that artificial intelligence (AI)-assisted tools were used only for language refinement, grammar improvement, and manuscript structuring purposes during the preparation of this work. All technical content, experimental implementation, results, and interpretations were independently developed and verified by the authors.

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