

Title of the Special Issue

Intelligent Optimization and Adaptive Design in Smart Wearables and Robotic Systems

Aims and Scope

Smart wearable devices and robotic systems are increasingly deployed across healthcare, industrial automation, urban mobility, and cultural environments. These systems rely on tight integration of sensing, computation, communication, and control to operate effectively under dynamic conditions. Recent progress in machine learning, multi-objective optimization, edge computing, and embedded intelligence has enabled advanced capabilities

The theme aligns with JCSE's focus on emerging computing technologies—including smart and intelligent computing, ubiquitous computing, and embedded systems—by addressing cross-layer challenges in perception, decision-making, and actuation. Contributions will span algorithmic innovation, architectural efficiency, and application-specific validation. Given the rapid deployment of autonomous and wearable systems in critical infrastructure, manufacturing, and public services, there is growing demand for solutions that ensure reliability, scalability, and interoperability. This special issue responds to that need by fostering integrated approaches that bridge theoretical advances with real-world system requirements.

Topics of Interest

This special issue invites original research contributions centered around the theme of "Advanced Optimization and Intelligence in Smart Wearable and Robotic Systems", covering but not limited to the following areas:

1. Intelligent Design and Optimization of Smart Wearables

Energy-efficient algorithms and low-power architectures for wearable sensors

Adaptive interface design using context-aware and affective computing

Machine learning-driven personalization in health monitoring wearables

Real-time anomaly detection and feedback mechanisms in wearable systems

2. Wearable Computing for Health and Well-being

AI-based abnormality detection from physiological time series (e.g., ECG, EEG, gait)

Deep learning models for motion estimation and yoga pose recognition

Smart clothing and soft sensors for continuous health tracking

Integration of cultural and social factors in wellness-oriented wearables

Privacy-preserving data processing in wearable health systems

3. Intelligent Robotics and Human-Robot Interaction

Path planning and control of autonomous mobile robots in dynamic environments

Collaborative control and dynamic scheduling in intelligent production lines

Imitation learning and dual optimization networks for robot behavior modeling

Robot grasping and manipulation using CNNs and image matching

Human-robot collaboration in manufacturing and service scenarios

4. Data Intelligence and System Optimization

Federated learning for privacy-sensitive wearable data aggregation

Multi-objective optimization in CNC machining and robotic operations

Graph-based learning for sensor network analysis and anomaly detection

Lightweight authentication protocols for secure communication in 5G-enabled robotic systems

Cloud-edge computation for real-time processing in wearable and robotic ecosystems

5. Cross-modal and Interactive Technologies

Transfer learning and multi-sensor fusion for visitor behavior prediction

AI-powered recommendation systems in immersive environments

Haptic feedback and tactile computing in wearable and robotic interactions

Important Dates

Manuscripts due by: June 31, 2026

Notification to authors: August 31, 2026

Final versions due by: October 31, 2026