



AI-Enabled Digital Health and Human-Centered Intelligent Systems

This issue of Big.D brings together ten contributions at the intersection of intelligent technologies and human health, illustrating how computational intelligence, wearable sensing, and data-driven analytics are reshaping the design, delivery, and evaluation of health-related systems across diverse populations and settings, from clinical rehabilitation to remote and resource-limited communities.

A first group of papers advances intelligent, human-centered monitoring and treatment systems. These include a wearable, machine-learning-based platform for remote mental health detection and intervention; a deep learning-optimized virtual reality interface for anxiety and depression treatment; and an AI-driven iterative design framework for medical device user experience that bridges engineering design methods with clinical usability needs. Extending intelligent sensing into physical rehabilitation and performance, further studies present wearable-sensor-based, deep-learning assessment of post-stroke motor recovery and a multi-center-validated biomechanical monitoring system for injury prevention in endurance athletes.

A second group addresses population-level health analytics enabled by digital and computational methods. Contributions in this group apply multi-scale spatial analysis to digital surveillance data to reveal geographic disparities in childhood malnutrition risk; examine digital health engagement for chronic disease management in low- and middle-income countries; synthesize, through systematic review and meta-analysis, evidence on digital learning tools for cognitive decline in older adults; and apply graph neural networks to blood transcriptomic data for metabolic phenotype stratification and prognosis prediction in obesity.

A final contribution broadens the issue's human-centered lens beyond the clinic, examining perceptions of pedagogical barriers across traditional and digital contexts. It reminds us that the successful adoption of any technology depends on the perceptions and lived experience of its intended users — a theme consistent with Big.D's commitment to responsible, human-centered technology innovation.

Together, this issue reflects Big.D's interdisciplinary mission: using engineering design to translate scientific and computational advances into validated methods, devices, and systems that demonstrably improve human outcomes. On behalf of the Editorial Board, we thank the authors for their contributions and the reviewers for their rigorous and constructive evaluations, and we hope readers find in this issue both concrete engineering advances and a broader vision for intelligent, sustainable, human-centered systems.