Thermal Technology and Artificial Intelligence in Health Informatics
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Editorial

Thermal Technology and Artificial Intelligence in Health Informatics (*TTAIHI*)

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Welcome to the inaugural issue of *Thermal Technology and Artificial Intelligence in Health Informatics* (*TTAIHI*). It is both an honor and a privilege to serve as the founding Editor-in-Chief of this new journal. We are thrilled to have the support of so many esteemed colleagues and friends from around the world, each bringing diverse expertise in thermal technology and AI in health informatics. Their commitment to joining our editorial board is deeply appreciated. We are also sincerely thankful for the invaluable support from our publisher, Scilight Press, based in Australia.

Thermal imaging represents a non-invasive, safe, and accessible modality with significant potential for early detection of (example) physiological abnormalities. As an adjunctive diagnostic tool, it offers valuable contributions to preventive healthcare by facilitating the identification of subclinical conditions before the onset of overt symptoms. Thermography is a reproducible and reliable technique capable of accurately reflecting inflammatory processes, making it suitable for serial monitoring and longitudinal studies in clinical settings.

Recent advances in sensor technology, image processing algorithms, and high-performance computing have catalyzed a resurgence of interest in thermal imaging within the biomedical domain. Modern infrared (IR) thermographic systems leverage high-resolution detectors and sophisticated image analysis pipelines to enable precise measurement and interpretation of surface and subcutaneous (underlying) temperature distributions. These systems offer enhanced capabilities in visualization, quantification, and temporal tracking of thermal signatures associated with health states.

Thermal imaging is increasingly integrated into biomedical applications due to its capacity to detect abnormal thermovascular patterns—such as those caused by angiogenesis, inflammation, or altered metabolic activity—without direct contact or ionizing radiation. Its efficacy is further amplified by the integration of artificial intelligence (AI), which enhances diagnostic accuracy through advanced pattern recognition, anomaly detection, and predictive modeling. AI-assisted thermographic analysis is particularly promising for use in health informatics, where large datasets can be mined for clinically relevant biomarkers and decision-support insights.

The *Thermal Technology and Artificial Intelligence in Health Informatics* (*TTAIHI*) journal serves as a dedicated platform for disseminating cutting-edge research at the intersection of thermal sciences, AI, and health informatics. Established in May 2025 by the *TTAIHI* Editorial Advisory Board, the journal is peer-reviewed and published quarterly by Scilight Press, headquartered in Melbourne, Australia. *TTAIHI*'s scope encompasses the biothermal mechanisms underlying health and disease (example), spanning micro- to macro-scale phenomena, and emphasizing translational approaches that bridge engineering, computational sciences, and clinical practice.

TTAIHI prioritizes contributions that explore the mechanistic and diagnostic value of temperature-based imaging and modeling, particularly in conjunction with AI techniques such as deep learning, computer vision, and data fusion. The journal encourages submissions involving innovative applications, case studies, algorithmic advancements, and experimental validations that highlight the clinical, industry, and technological potential of thermal diagnostics.

In summary, thermal imaging technologies—bolstered by the latest developments in digital imaging and AI—are poised to become integral components of modern health monitoring and diagnostics. Their utility in

surface temperature assessment, disease surveillance, and personalized medicine continues to grow. Thermography represents a valuable adjunct to conventional imaging modalities—not due to any inadequacy or inconclusiveness of the latter, but because it introduces a complementary physiological dimension that enhances the monitoring protocol. The role of breast thermography in assessing therapeutic response as an example, particularly within oncological contexts as substantiated in literature, is both recognized and appreciated. The concurrent evaluation of anatomical tumor regression alongside associated thermal patterns embodies a multidimensional framework for clinical surveillance, which is particularly advantageous in the development of individualized, response-guided treatment protocols. Although this editorial has already been published and is no longer in the preliminary stages of validation, continued scientific exploration and integration of thermal technology into clinical practice remain essential. It is noteworthy that many practitioners within conventional medical settings still regard breast thermography as a tool of secondary utility, to be employed only when standard methods are insufficient. It is, therefore, pedagogically important to draw attention to this perception and undertake a critical examination of its underlying assumptions in healthcare field.

We are grateful to the many authors and reviewers who are contributing to this inaugural issue and next as planned, offering a comprehensive overview of emerging trends, methodological innovations, and interdisciplinary case studies. Their work exemplifies the journal's mission to advance understanding and practical application of thermal and AI technologies in health informatics.

Conflicts of Interest

The author declares no conflict of interest.