

Special Issue

Explainable Artificial Intelligence (XAI) in Medical Imaging

Message from the Guest Editors

Using artificial intelligence (AI) in medical imaging can transform diagnostics, prognosis, and clinical decision-making. However, its adoption is limited by a lack of transparency and interpretability. Explainable Artificial Intelligence (XAI) addresses this by providing insights into how AI systems make predictions, increasing clinician trust and enabling regulatory compliance.

Current XAI techniques—such as SHapley Additive exPlanations, LIME, and Grad-CAM—have shown promise across imaging modalities. However, significant gaps remain:

- Lack of standardized benchmarks for evaluating explanation quality
- Insufficient integration of clinical context in interpretability frameworks
- Limited understanding of how explanations influence clinical decision-making

This SI welcomes original research, reviews, and perspective articles on novel XAI methods applied to medical imaging. Topics of interest include:

- Applications of XAI to emerging clinical problems
- Critical analyses of current XAI pitfalls and limitations
- Development and validation of new XAI techniques
- Addressing ethical and regulatory standards for XAI clinical use

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