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Current challenges of implementing artificial intelligence in medical imaging

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Highlights

- Challenges: Data governance, algorithm robustness, stakeholder consensus and legal liability.
- General Data Privacy Regulation has been published to ensure high quality of data governance.
- Model transparency, robustness and fairness are important for AI development to increase trust.
- WHO and FDA published ethical AI technology regulatory framework to ensure safety of the AI system.



Abstract

The idea of using artificial intelligence (AI) in medical practice has gained vast interest due to its potential to revolutionise healthcare systems. However, only some AI algorithms are utilised due to systems' uncertainties, besides the never-ending list of ethical and legal concerns. This paper intends to provide an overview of current AI challenges in medical imaging with an ultimate aim to foster better and effective communication among various stakeholders to encourage AI technology development. We identify four main challenges in implementing AI in medical imaging, supported with consequences and past events when these problems fail to mitigate. Among them is the creation of a robust AI algorithm that is fair, trustable and transparent. Another issue is on data governance, in which best practices in data sharing must be established to promote trust and protect the patients' privacy. Next, stakeholders, such as the government, technology companies and hospital management, should come to a consensus in creating trustworthy AI policies and regulatory frameworks, which is the fourth challenge, to support, encourage and spur innovation in digital AI healthcare technology. Lastly, we discussed the efforts of various organizations such as the World Health Organisation (WHO), American College of Radiology (ACR), European Society of Radiology (ESR) and Radiological Society of North America (RSNA), who are already actively pursuing ethical developments in AI. The efforts by various stakeholders will eventually overcome hurdles and the deployment of AI-driven healthcare applications in clinical practice will become a reality and hence lead to better healthcare services and outcomes.

Keywords

[Artificial intelligence](#) • [Medical imaging](#) • [Challenges](#) • [Ethics](#) • [Data governance](#) • [Algorithm robustness](#)

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