

Special Issue Reprint

Artificial Intelligence and Machine Learning in Spine Research

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Edited by
Min Cheol Chang

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This Reprint highlights the rapidly growing role of artificial intelligence (AI) and machine learning (ML) in advancing spine research and clinical care. By harnessing large-scale data and sophisticated algorithms, AI and ML are transforming traditional approaches to diagnosis, treatment planning, and outcome prediction for spinal disorders. The contributions in this Reprint illustrate how these technologies improve imaging analysis, enable personalized treatment strategies, and support predictive modeling to enhance patient outcomes. This Reprint also addresses the challenges and ethical considerations associated with AI-driven research, including data quality, algorithm transparency, and clinical integration. Through a collection of recent studies and reviews, it offers an in-depth overview of how AI and ML are shaping the future of spine medicine, from automated imaging interpretation to predictive analytics and patient-specific care. This Reprint serves as a valuable reference for clinicians, researchers, and technologists seeking to understand and apply AI and ML innovations within the field of spine research. It underscores the potential of these technologies to revolutionize diagnostics; improve therapeutic precision; and contribute to safer, more effective, and personalized spinal healthcare.

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