

# Artificial Intelligence in Radiation Oncology

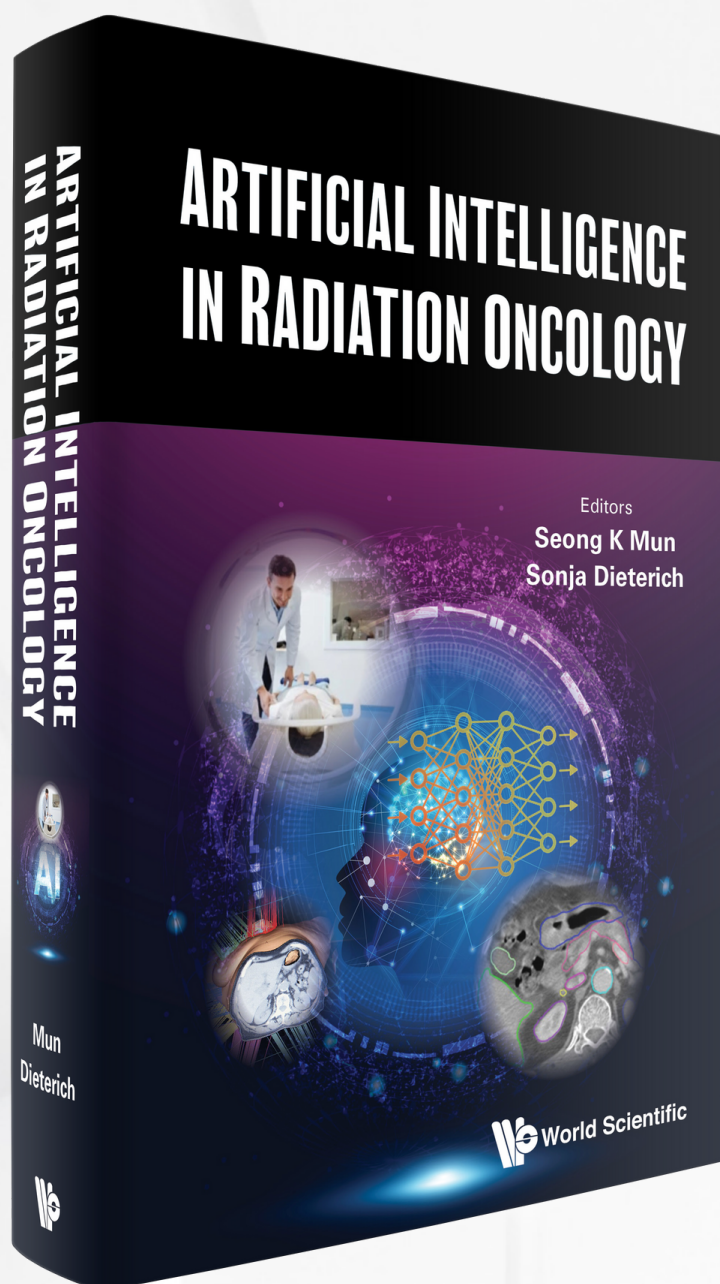
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The clinical use of Artificial Intelligence (AI) in radiation oncology is in its infancy. However, it is certain that AI is capable of making radiation oncology more precise and personalized with improved outcomes. Radiation oncology deploys an array of state-of-the-art technologies for imaging, treatment, planning, simulation, targeting, and quality assurance while managing the massive amount of data involving therapists, dosimetrists, physicists, nurses, technologists, and managers. AI consists of many powerful tools which can process a huge amount of inter-related data to improve accuracy, productivity, and automation in complex operations such as radiation oncology.

This book offers an array of AI scientific concepts, and AI technology tools with selected examples of current applications to serve as a one-stop AI resource for the radiation oncology community. The clinical adoption, beyond research, will require ethical considerations and a framework for an overall assessment of AI as a set of powerful tools.

30 renowned experts contributed to sixteen chapters organized into six sections: Define the Future, Strategy, AI Tools, AI Applications, and Assessment and Outcomes. The future is defined from a clinical and a technical perspective and the strategy discusses lessons learned from radiology experience in AI and the role of open access data to enhance the performance of AI tools. The AI tools include radiomics, segmentation, knowledge representation, and natural language processing. The AI applications discuss knowledge-based treatment planning and automation, AI-based treatment planning, prediction of radiotherapy toxicity, radiomics in cancer prognostication and treatment response, and the use of AI for mitigation of error propagation. The sixth section elucidates two critical issues in the clinical adoption: ethical issues and the evaluation of AI as a transformative technology.

## Readership

Medical physicists, biomedical engineers, AI developers and engineers, radiation oncologists, hospital managers in radiation oncology departments, medical technology enthusiasts.



 **Recommend to Library**

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