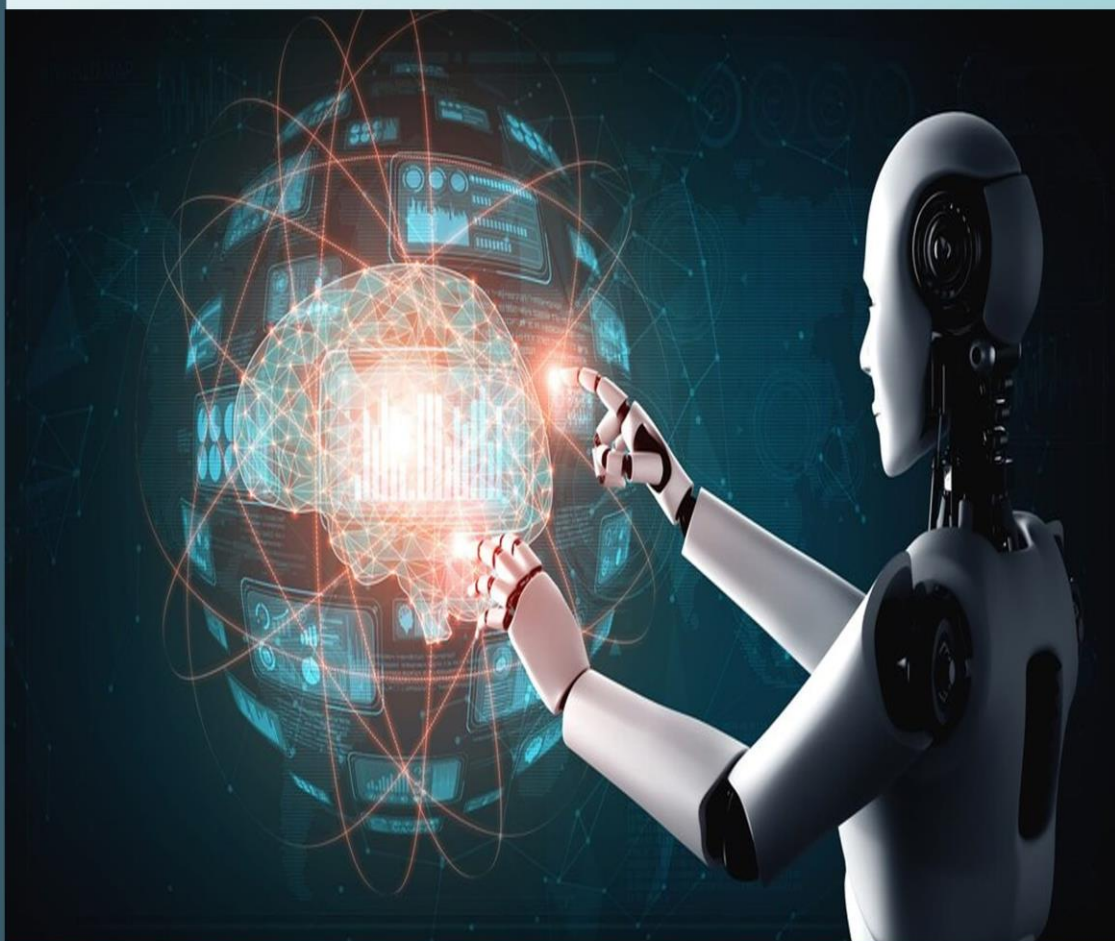


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MEDICAL IMAGE ANALYSIS: REVOLUTIONIZING DIAGNOSIS THROUGH DEEP LEARNING

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Abstract:

Medical imaging is a crucial process in medicine, involving the acquisition of internal organ images for diagnostic and research purposes. Medical image analysis aims to enhance clinical research and treatment effectiveness. Deep learning has transformed medical image analysis, with exceptional success in tasks such as image registration, segmentation, feature extraction, and classification. The availability of processing resources and the resurrection of deep convolutional neural networks are driving this breakthrough. Deep learning excels at detecting hidden patterns in images, assisting clinicians in making correct diagnoses. It has been shown to be extremely effective in detection of cancer, organ segmentation, classification of diseases, and computer-aided diagnosis. Numerous deep-learning methods have been developed and published for analyzing medical images, catering to various diagnostic needs. Overall, deep learning has significantly improved medical image analysis, paving the way for more accurate and efficient medical diagnoses and treatments. This chapter explores the various modalities, advancements, and applications of medical imaging, showcasing how this technology has become an indispensable tool for diagnosis, treatment planning, and monitoring of various medical conditions. From the early days of X-rays to the latest cutting-edge imaging techniques, we will delve into the evolution and impact of medical imaging on modern medicine.

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Contact Email: info@iipseries.org

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MEDICAL IMAGE ANALYSIS: REVOLUTIONIZING DIAGNOSIS THROUGH DEEP LEARNING

Abstract

Medical imaging is a crucial process in medicine, involving the acquisition of internal organ images for diagnostic and research purposes. Medical image analysis aims to enhance clinical research and treatment effectiveness. Deep learning has transformed medical image analysis, with exceptional success in tasks such as image registration, segmentation, feature extraction, and classification. The availability of processing resources and the resurrection of deep convolutional neural networks are driving this breakthrough. Deep learning excels at detecting hidden patterns in images, assisting clinicians in making correct diagnoses. It has been shown to be extremely effective in detection of cancer, organ segmentation, classification of diseases, and computer-aided diagnosis. Numerous deep-learning methods have been developed and published for analyzing medical images, catering to various diagnostic needs. Overall, deep learning has significantly improved medical image analysis, paving the way for more accurate and efficient medical diagnoses and treatments. This chapter explores the various modalities, advancements, and applications of medical imaging, showcasing how this technology has become an indispensable tool for diagnosis, treatment planning, and monitoring of various medical conditions. From the early days of X-rays to the latest cutting-edge imaging techniques, we will delve into the evolution and impact of medical imaging on modern medicine.

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Authors

Anum Kamal

Assistant Professor
Department of Computer Science and Engineering
Integral University
Lucknow, India.
anumkamal22@gmail.com

Dr. Faiyaz Ahamad

Associate Professor
Department of Computer Science and Engineering,
Integral University
Lucknow, India.
faiyaz.ahamad@yahoo.com

Dr. Aisha Kamal

Professor
Department of Bioengineering
Integral University
Lucknow, India.
aishakamal04@gmail.com