

ABSTRACTS

ARTIFICIAL INTELLIGENCE -LANDSCAPE IN CLINICAL MEDICINE

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Artificial intelligence (AI) is rapidly reshaping clinical medicine, offering tools that can perform complex tasks such as learning, reasoning, and decision-making—functions traditionally associated with human expertise. Core areas of AI, including machine learning, deep learning, and natural language processing, are now being integrated into multiple aspects of healthcare. In everyday clinical practice, AI has shown particular strength in improving diagnostic accuracy, especially in medical imaging modalities such as X-ray, CT, MRI, and histopathology, where it can identify subtle abnormalities and support earlier detection of disease. Recent progress highlights the ability of AI systems, trained on large and diverse datasets, to deliver highly accurate diagnoses and generate clinically meaningful insights. These include applications in tumor profiling, detection of genetic variations, and prediction of treatment responses. Evidence from case-based applications further illustrates AI's value in addressing complex clinical challenges—for example, identifying rare genetic conditions through whole genome analysis and guiding individualized treatment strategies in difficult-to-treat cases, ultimately enhancing outcomes and reducing reliance on invasive procedures. AI is also influencing medical education by introducing more personalized and adaptive learning approaches. Tools such as intelligent tutoring systems, virtual patient simulations, and conversational platforms are helping to create more flexible and competency-driven training environments. Despite these advances, several challenges remain. Issues related to data quality, lack of standardization, ethical considerations—including privacy, bias, and transparency—and the need for effective collaboration between clinicians and AI systems continue to shape its adoption. This paper highlights the expanding role of AI in modern healthcare and emphasizes the need for its thoughtful and structured integration. Developing clear standards, ensuring ethical oversight, and building AI literacy among healthcare professionals will be essential to fully realize its potential. While AI is unlikely to replace clinicians, its integration will play a defining role in the future of clinical practice

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