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The AI Revolution in Personalized Medicine: A Multidisciplinary Review.

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Abstract

Personalized medicine is a significant step toward precision medicine, in which data-driven insights are used to tailor prevention and treatment plans to each person's unique needs. This literature review analyzes recent studies on artificial intelligence (AI) applications aimed at attaining this degree of personalization across diverse medical domains. Deep learning models are being used more in cardiovascular health to warn people early about atrial fibrillation and to make heart mesh inference more personalized [1]. Medical imaging advancements now leverage federated learning and pre-trained models for enhanced diagnostic accuracy and automated reporting [2]. In the fields of genetics and reproductive health, multimodal learning and reinforcement techniques are utilized for predicting embryo viability and identifying individualized genetic markers [3]. Finally, the management of chronic diseases has seen the emergence of extensive language multimodal models and transparent surveillance systems for forecasting diabetes and other non-communicable conditions [4, 5]. AI could change personalized medicine for the better, but it needs to get past problems with clinical implementation and data standardization first.

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