

A Review on AI-Driven Personalized-Preventive Digital Healthcare Systems: Revolutionizing Health Equity through Protecting Systems' Privacy, Security, and Ethical Phenomena

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Abstract

Healthcare systems across the globe have begun adopting various digital technologies, promising increased efficiency and equity. However, even among emerging economies that continue to witness large gaps in healthcare integration, efficient integration remains a problem. The rapid adoption of new technologies, driven by the fourth industrial revolution (4IR) and disruptive events such as the COVID-19 pandemic, has transformed healthcare delivery, underscoring the need for sustainable technological solutions. Artificial intelligence (AI) has emerged as a transformative tool across various industries, including digital health. However, existing literature lacks a comprehensive exploration of AI's role in preventive and equitable healthcare. The research, therefore, aims to address this scarcity by investigating the integration of AI with federated learning, blockchain, and zero-knowledge proofs (ZKPs) to improve healthcare delivery while ensuring privacy and security. The design involves a systematic literature review (SLR) that aggregates the extant literature from Scopus and Web of Science to identify insights into the subject area and propose future research agenda. It provides actionable insights and outlines ways to build competencies to help integrate AI-powered innovations into healthcare ecosystems. The potential findings will contribute to healthcare equity by developing innovative models for both developed and emerging regions, such as Victoria and Dhaka.

Keywords

Digital healthcare systems, privacy and security, federated learning, blockchain technology, zero-knowledge proofs, systematic literature review.