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Integrating Cloud Computing and Big Data Analytics in AI Driven Genetic Research: Enhancing Healthcare Management Through Predictive Modelling and Personalized Treatment Strategies

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The integration of cloud computing and big data analytics in AI-driven genetic research is revolutionizing healthcare management by enabling predictive modelling and personalized treatment strategies. This study explores how machine learning algorithms analyze vast genomic datasets to identify disease-associated genetic markers, enhance diagnostic accuracy, and optimize therapeutic interventions. Cloud computing provides a scalable and secure infrastructure for processing large-scale genetic data, facilitating real-time collaboration among researchers and clinicians while ensuring data privacy and regulatory compliance. AI-powered predictive analytics supports early disease detection, risk assessment, and targeted drug development, advancing precision medicine and improving patient outcomes. Additionally, this research highlights the challenges of data interoperability, ethical considerations, and algorithmic transparency in AI-driven genomic research. By leveraging cloud-enabled AI and big data analytics, the healthcare industry can enhance decision-making, accelerate medical discoveries, and deliver more effective, patient-centric treatment solutions.