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(57) Abstract :

The present invention relates to a computer-based tool for predictive healthcare data analysis that integrates patient data from diverse sources using a modular architecture comprising a data ingestion unit (101), preprocessing engine (102), predictive model layer (103), explainable AI module (104), visualization dashboard (105), and secure cloud database (106). The invention employs hybrid machine learning and deep learning algorithms for accurate predictions, offers interpretability through explainable AI, and ensures secure compliance with privacy regulations. This system provides real-time, actionable insights for disease prevention, personalized care, and healthcare resource optimization.

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