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(57) Abstract :
Disclosed herein is a federated artificial intelligence-driven multi-disease prediction system and method thereof (100) that comprises a user device (102) for user input through biomedical sensors (104), medical imaging acquisition units (106), and a patient record input module (108). The system (100) features a processing unit (110) with a data preprocessing module (112) for normalization and feature extraction, a federated learning module (114) for decentralized training, and an explainable artificial intelligence module (116) for interpretable predictions. An edge artificial intelligence module (118) enables real-time disease detection, while a reinforcement learning module (120) provides personalized treatment recommendations. Blockchain security (122) ensures data integrity and regulatory compliance. A communication network (124) facilitates encrypted data exchange, and a storage unit (126) maintains records and trained models. The output unit (128) generates diagnostic reports, while a user interface (1

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