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(57) Abstract :
ABSTRACT MACHINE LEARNING-BASED ADR AND SYMPTOM PREDICTION SYSTEM The invention relates to a machine learning system for predicting adverse drug reactions by integrating healthcare data from diverse sources. It comprises a data aggregation module for collecting raw data such as patient demographics and clinical records; a data preprocessing module that cleans, normalizes, and extracts features; and a model training and prediction module that employs supervised learning on historical datasets while performing cross-validation and hyperparameter tuning using classifiers like decision trees and random forests. Additionally, the system includes an output interpretation and decision support module for translating predictive risk scores into clinical recommendations, a user interface module for displaying information, a data storage and integration module for secure data retention, and a security and compliance module for ensuring data protection and regulatory adherence.

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