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(57) Abstract :

The present invention relates to a machine learning-based system for real-time quality control in pharmaceutical manufacturing processes. This innovative system integrates a data acquisition module that continuously monitors critical production parameters, a data processing unit for data preprocessing, and a machine learning module utilizing both supervised and unsupervised learning algorithms. By predicting potential quality deviations and detecting anomalies, the system enables proactive adjustments and automated corrective actions, significantly enhancing the reliability and efficiency of the manufacturing process. The user interface provides real-time insights and alerts to operators, facilitating informed decision-making and ensuring compliance with regulatory standards. Ultimately, this invention aims to improve product quality while optimizing operational efficiency in the pharmaceutical industry. Accompanied Drawing [FIGS. 1-2]

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