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(57) Abstract :
Abstract The present invention discloses a machine learning-based system for predicting demand and supply in digital markets. The invention integrates real-time and historical data from multiple sources such as transaction records, consumer behavior analytics, competitor activities, logistics information, and external events. The system consists of modular components, including a data acquisition unit, a preprocessing and feature engineering module, a machine learning prediction engine, and an optimization module. Predictions are delivered through an interactive visualization and reporting interface. The system is capable of identifying hidden patterns, forecasting short-term and long-term market demand and supply, and recommending adaptive strategies such as price adjustments, promotional campaigns, or inventory balancing. Unlike conventional forecasting models, this invention leverages deep learning, reinforcement learning, and real-time anomaly detection to handle the dynamic and volatile nature of digital markets. The invention improves prediction accuracy, reduces the risks associated with stockouts or overstocking, and enhances decision-making efficiency across industries including e-commerce, digital supply chains, retail, and financial forecasting

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