

From Data to Decisions: The Role of AI and Machine Learning in Modern Financial Markets

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Abstract: *Artificial intelligence (AI) and machine learning (ML) are configured to transform one's ability to make decisions based largely on data, improve predictive analytics greatly, and innovate completely new trading strategies that have turned the entire course of financial markets very differently in present times. It discusses comprehensive yet concise applications, techniques, trends, challenges, and future possibilities of AI and ML in finance. It has brought unprecedented transformation to the conventional practices in stock price prediction using supervised learning, market segmentation with unsupervised learning, and algorithmic trading through reinforcement learning, making them more efficient and profitable. Assistant in Demanding Challenges Despite such clear benefits, the integration still has challenges, including data bias, legality, ethics, and regulatory. Key takeouts in this regard depict these technologies as game-changing and weigh heavily to acquire urgent strong frameworks through which these risks can be mitigated. It converted a hypothesis into a structure that could now be tested in future studies through the discussion of relevant literature. This study thus demonstrated its effectiveness to future tests by real-life applications at the junction of academia and industry, based on the qualitative plus quantitative realities*

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