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enhanced multi-agent system for stock prediction utilizing machine learning and generative AI.

The objective of this study was to enhance an interactive, multi-agent stock prediction application that automates financial forecasting and trading strategies. The application was built using Python and Streamlit, employing a multi-agent architecture managed through the Model Context Protocol (MCP) for inter-agent communication. The enhanced system utilizes Agent skill technology and a skills.MD framework to define capabilities for five specialized agents: an Analysis agent for data feature engineering, a Predictor agent for forecasting, a Decider agent for risk and strategy assessment, a Trader agent for execution, and a Team Coordinator agent to manage the workflow. To perform the predictive analysis, the Predictor agent leverages linear regression, random forest regression, support vector regression, and XGBoost models. The essential results indicate that the multi-agent framework successfully orchestrates complex financial tasks, allowing the Team Coordinator to seamlessly route data and decisions between the analytical and execution agents. In conclusion, using a modular, multi-agent approach significantly enhances the flexibility and efficiency of automated stock prediction systems, providing a robust platform for integrating advanced machine-learning forecasting tools with automated trading execution.