# CA-2 AI-Powered Trading Bot Report

Name: Srinivas Kota, Vedire Shashank Reddy

Prn: 21070126050,21070126111

Div: AIML-A3,B2

**1. Need analysis of the application/ Statement of need**

Speed ​​and accuracy are important for investors in financial markets these days. Manual buying and promoting frequently lacks the capacity to analyze large records and trades in actual time, especially in cryptocurrency markets that operate 24/7 developing the want for automation and AI-pushed choices to allow clearance for specifically advanced shopping for and selling approaches, humans -Reduced mistakes and progressed profitability. This buying and selling bot fulfills this want by the use of machine learning models to calculate charging behaviors and execute trades based totally absolutely on classical information from Binance

**2. Technical Functionality**

Buying and selling for the AI-powered bot uses supervised analytics to expect cryptocurrency fees orders in particular based totally on ancient market information The bot makes use of the Binance API to retrieve cryptocurrency shopping for and merchandising information (e.g. For Bitcoin). Key sports include:

• Using the Binance API to import ancient fee information.

• Technical metrics consisting of Moving Common (MA50, MA200) and Relative Electricity Index (RSI).

• Randomly school Wooded Place models to expect whether or no longer fees will growth or decrease day after today.

• Post-take a look at to monitor and normalize all operations primarily based on old statistics and the accuracy of the repeated decision.

Three. Building substances

The bot’s structure follows those vital steps.

• Data Fetching: Using the Binance API to fetch cryptocurrency facts.

• Feature Engineering: Calculation of capabilities (e.G., relocation now not unusual, RSI) to serve as a prediction function.

• Simulation training: Supervised gaining knowledge of method for historic statistics schooling (where random timber).

• Back testing: Known definitions are used in ancient records to simulate organizational choices and takes

**3. Architecture:**

The bot’s architecture follows these basic steps.

* Data Fetching: Using the Binance API to fetch cryptocurrency data.
* Feature Engineering: Calculating indicators (e.g., moving average, RSI) to act as predictive features.
* Simulation training: supervised learning process (random forest) for training historical data.
* Backtesting: Applying the trained model to historical data to simulate business decisions and test system performance.

The program uses Python libraries like pandas for data conversion, scikit-learn for machine learning, and binance-python to interact with the Binance API.

**4. Usage / Scope**

The trading bot is designed for the crypto market and can be used with any cryptocurrency on Binance. A key application is automated trading, where bots make buy/sell decisions based on machine learning predictions. The scope can be extended to:

* To include more complex machine learning models.
* Integration with live trading platforms to automate trade execution.
* Extend the system to work with other asset classes such as stocks or forex..

**5. Impact Overview**

This AI-powered buying and selling bot helps to automate buying and selling selections, which can make buying and selling extra constant and facts-driven in comparison to guide trading. The fundamental results are:

* Increased profitability: Bots use predictive fashions to make knowledgeable trades, decreasing emotional biases.
* Efficiency: By automating the manner of reading large information units and executing trades, the bot lets in the dealer to recognition on approach.
* Risk management: Back testing enables investors to assess and refine potential dangers earlier than deploying bots with live coins

**6. Conclusion**

This AI-powered buy-influence bot is a step closer to the future of electronic buying and selling in the cryptocurrency space with predictive analytics allowing investors to keep track of the rapidly changing crypto market by additionally becoming aware of future fashion, advertising trends and energy mechanisms to mitigate risk Bots need to be equipped.