

**Summary of the Algorithm:**

Alphashots.ai It appears that AI employs clustering or K-Nearest Neighbors (KNN) in conjunction with Dynamic Time Warping (DTW) to locate comparable historical patterns.

**Dynamic Time Warping (DTW)'s Role:**

By aligning sequences with slight timing differences, DTW is well-suited for comparing time-series data. Even if there are only slight timing shifts, it enables the system to match the current market sequence with similar patterns from previous data.

**Clustering or KNN enhancement:**

KNN or clustering algorithms are likely used to refine DTW matches, locating specific historical data periods that are closely aligned with the current trend.

By focusing on periods with a lot of similarity, this refinement makes the trend predictions more accurate and relevant.

**Outcome:**

Alphashots.ai can predict when DTW, clustering, or KNN are used together. AI to provide results that are generated by AI and highlight historical patterns that reflect market behavior today, assisting in trend prediction.

**Question 2****Technical Indicators Analysis for EUR/INR****Approaches Taken for EUR/INR Currency Analysis****1. Data Collection:**

- a. Utilized the yfinance library to gather historical exchange rate data for the EUR/INR currency pair from January 1, 2023, to September 30, 2024. This data includes essential metrics such as Open, High, Low, Close, and Volume.

**2. Technical Indicators Calculation:****a. Moving Average (MA20):**

- i. Calculated the 20-day simple moving average (MA20) to identify the average closing price over the last 20 days, which helps to smooth out price fluctuations and identify trends.

**b. Bollinger Bands:**

- i. Constructed Bollinger Bands using the MA20 and the standard deviation (STD) of the closing prices over the same period. The upper and lower bands were calculated as follows:

1. **Upper Band:**  $MA20 + (2 * STD20)$

2. **Lower Band:**  $MA20 - (2 * STD20)$

- ii. This indicator helps to identify overbought or oversold conditions in the market.

c. **Commodity Channel Index (CCI):**

- i. Computed the CCI to assess the current price level relative to its average price over a specified period. The formula used:

$$CCI = (TypicalPrice - MovingAverage) / 0.015 * Mean Deviation$$

- ii. The CCI helps to determine whether an asset is overbought or oversold.

3. **Decision-Making Process:**

- a. Developed a decision-making function that evaluates the latest market data against the calculated indicators:
  - i. **MA20 Decision:** A BUY signal is generated if the latest closing price is above the MA20; a SELL signal is given if below; otherwise, it's NEUTRAL.
  - ii. **Bollinger Bands Decision:** A SELL signal is triggered if the closing price exceeds the upper Bollinger Band; a BUY signal if below the lower band; otherwise, it's NEUTRAL.
  - iii. **CCI Decision:** A BUY signal is issued if the CCI is below -100; a SELL signal if above 100; otherwise, it's NEUTRAL.
- b. Each indicator provides independent signals for better decision-making.

4. **Visualization:**

- a. Created graphs using matplotlib to visualize the closing prices, MA20, Bollinger Bands, and CCI. This provides a clearer understanding of market trends and the context for the decisions made based on the indicators.

5. **Assumptions:**

- a. Assumed that past price data would give reliable insights into future price movements based on technical indicators.
- b. Considered a standard trading approach where overbought and oversold conditions are identified using the Bollinger Bands and CCI.

1. Indicators Summary

Indicator	1-day (October 1, 2024)	1-week (October 7, 2024)
MA20	92.89	92.89
Bollinger Upper	93.61	93.61
Bollinger Lower	92.18	92.18
CCI	120.85	120.85

2. Decision Based on Indicators

Decision Factor	1-day Decision	1-week Decision
MA20	BUY	BUY

Bollinger Bands	NEUTRAL	NEUTRAL
CCI	SELL	SELL

3. Overall Decision Summary

Time Frame	Analysis	Overall Decision
1-day	The closing price is above the MA20, indicating bullish momentum. The price is within the Bollinger Bands, suggesting consolidation. CCI indicates overbought conditions.	<b>Mixed signals:</b> <b>Prefer to buy, but exercise caution due to CCI.</b>
1-week	The closing price remains above the MA20, supporting a bullish outlook. The price is still within the Bollinger Bands, with CCI suggesting overbought.	<b>Mixed signals:</b> <b>Buying opportunity but watch for corrections.</b>

Summary

Both analyses suggest a generally bullish outlook based on the MA20. However, the CCI indicates overbought conditions, prompting caution. While a buying opportunity exists, investors should stay alert to potential corrections, particularly if CCI continues to indicate an overbought market.

Output:

