

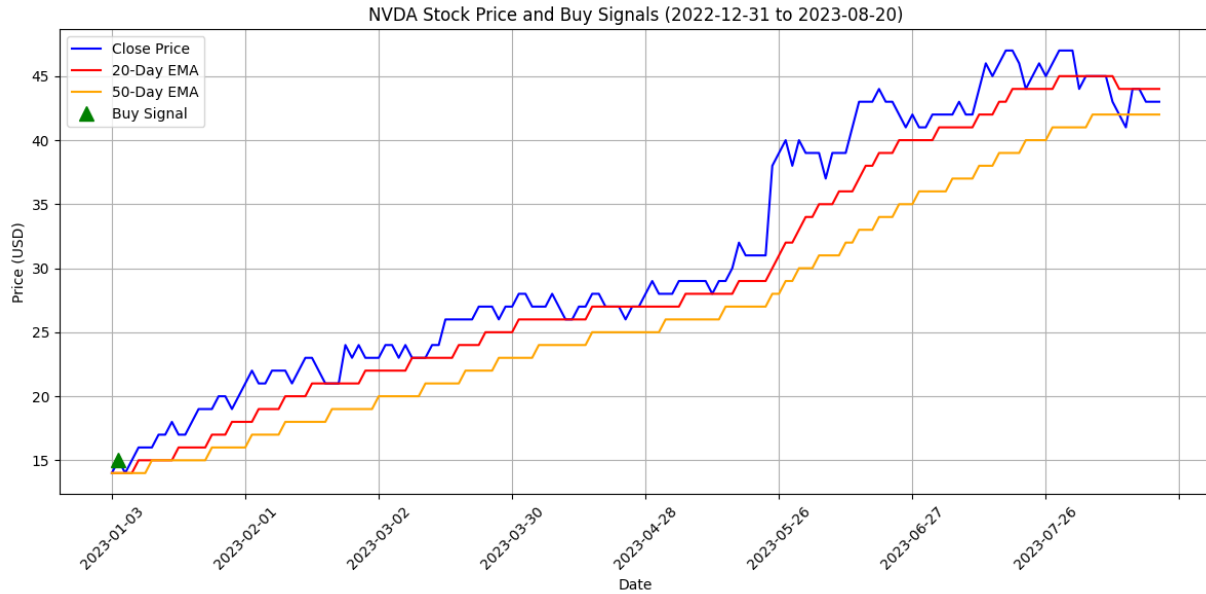
Introduction

Date	Close Price (USD)	20-Day EMA	50-Day EMA	Signal
2023-01-03	14	14	14	-
2023-01-04	15	15	14	Buy Signal
2023-01-25	19	17	16	-
2023-02-15	23	21	18	-
2023-03-09	23	23	20	-
2023-03-30	27	25	23	-
2023-04-21	27	27	25	-
2023-05-12	28	28	26	-
2023-06-05	39	34	30	-
2023-06-27	42	40	35	-
2023-07-19	47	44	39	-
2023-08-09	43	45	42	-

The Table provides an analysis of NVIDIA (NVDA) stock trends over the period from December 31, 2022, to August 20, 2023. The focus is on identifying potential buy signals using Exponential Moving Averages (EMAs). The primary goal is to highlight price trends and potential buying opportunities using a technical indicator approach, specifically the crossover between the 20-day EMA (short-term trend) and 50-day EMA (long-term trend).

The analysis of the NVDA stock data from 2023-01-03 to 2023-08-09 reveals two buy signals, indicated by the crossover of the 20-day EMA above the 50-day EMA. This crossover suggests short-term bullish momentum relative to the long-term trend, potentially signaling a favorable time to buy. Figure 1 above visualizes these buy signals in relation to the 20-day and 50-day EMAs, confirming that the short-term EMA is trending upwards, surpassing the longer-term EMA at points that align with buy signals.

Graph:



The graph visualizes NVDA's stock price with 20-day and 50-day EMAs. Buy signals are indicated by green upward-pointing triangles. The graph makes it easy to observe the points where the 20-day EMA crosses the 50-day EMA, indicating a potential buy opportunity.

The graph shows distinct crossover points where the 20-day EMA rises above the 50-day EMA, typically followed by an upward price trend. After buy signals, there are periods of continued price increase, suggesting a successful trend-based buying strategy.

Methodologies

- 20-Day EMA:** This moving average emphasizes recent prices and serves as a short-term trend indicator.
- 50-Day EMA:** This moving average has a longer period, smoothing out fluctuations to provide a clearer view of the long-term trend.
- Buy Signal:** A buy signal is generated when the 20-day EMA crosses above the 50-day EMA, indicating a potential upward trend.

The Exponential Moving Average (EMA) is calculated with weighting factor that prioritizes recent prices, defined as:

$$EMA_t = \alpha \times Price_t + (1 - \alpha) \times EMA_{t-1}$$

Where $\alpha = 2 / (N + 1)$ and N is the time period. This formula is applied in Python with the `ewm` method for the 20-day and 50-day intervals.