# Volatility-Aware Exponential Moving Average (VEMA)

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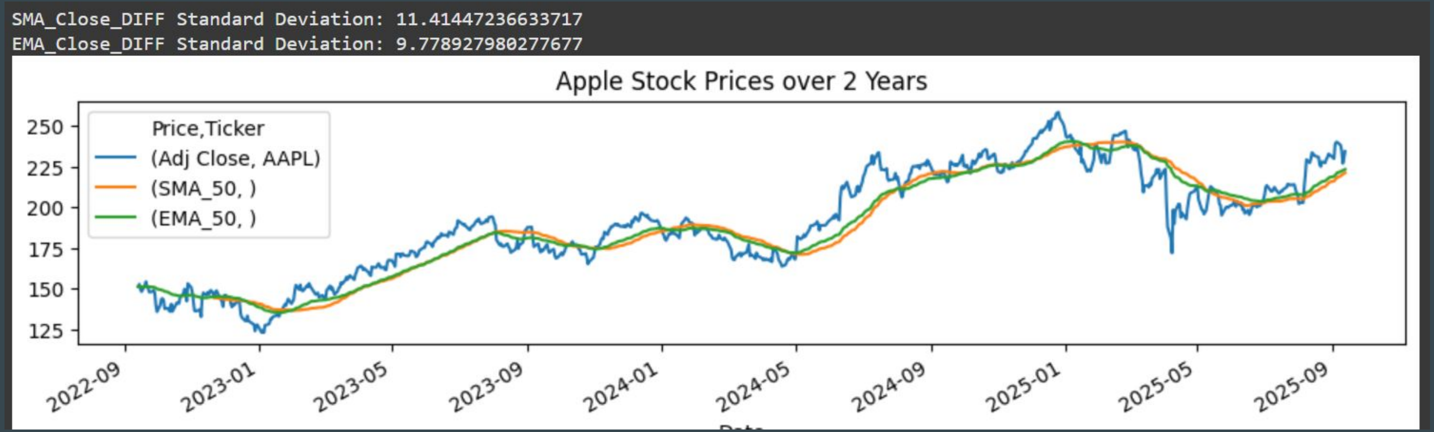
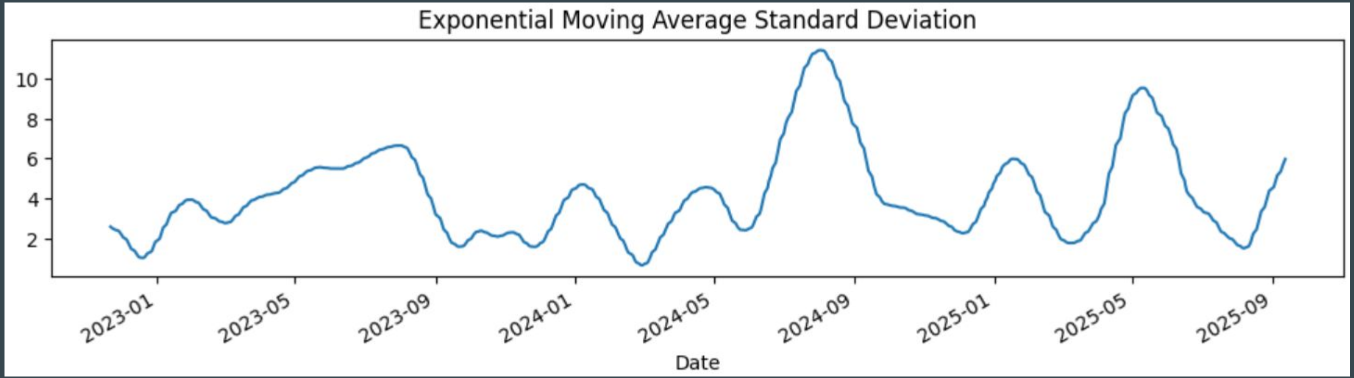
# Fundamentals

Exponential Moving Average (EMA): A type of moving average that gives more weight to more recent prices. This gives it the benefit of being more responsive to price changes.

Average True Range (ATR): A calculation which essentially measures the average volatility of a market over some period of time.



# Strategy




1. Make the EMA trace for the Apple stock with a 50 day span.
2. Use ATR to measure the volatility of the stock within a 20 day period.
3. Modify the k parameter to increase the buy/sell mark when the market is more volatile and decrease the buy/sell mark when the market is less volatile. This will range from 0.75-1.25 and be based on the standard deviation of the EMA.
4. Make a decision (buy if price > EMA + k*ATR, sell if price < EMA - k*ATR).

## Results

**Total Return:**

1.407

**Sharpe Ratio:**

-0.052 (not good)

**Number of Trades:**

8

## Future Changes

- Check different periods for both EMA and ATR.
- Finding optimal range for the k ratio of ATR.
- Provide more sufficient cost and risk managements.