Mathematical Trading Strategies

Assignment 2

Description: I did the tasks stepwise by taking the historical data for NASDAQ and NSE indices and then calculating the correlation coefficient between their common data. Then an analysis of their lead-lag relationship was established. NASDAQ was found to be the index which can be used to optimize the parameters of the indicators for signal generation. Then, 3 indicators namely were coded using TA-lib in python. They were iterated over a range of parameters and optimized parameters were calculated using brute-force grid search for them. These parameters were then used to calculate the metrics of Assignment-1 for the indicators. Then the index NSE was chosen for Signal Generation analysis using the optimized parameters from the analysis on NASDAQ.

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| --- | --- | --- | --- |
|  | MACD | Bollinger Bands | Keltner Channels |
| Cumulative returns | 4.73585828374554 | 4.73585828374554 | 4.73585828374554 |
| Sharpe Ratio | -0.10422264951165501 | -0.19336397178882714 | -0.22638524681201094 |
| Max Drawdown | 0.4501579818218941 | 0.4501579818218941 | 0.4501579818218941 |