SPY Price Prediction Trading

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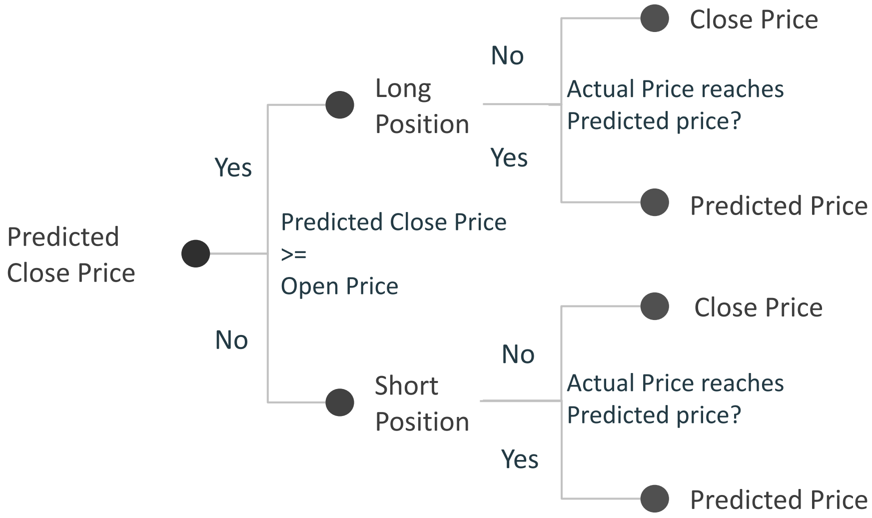
Method

- Data
  - Yahoo Finance
  - SPY, ^GSPC, ^TNX
- Hypothesis Test
  - Linear Regression
  - Correlation
- Regressors
  - Random Forest Regressor
  - Linear Regressor
  - Training, Validation, Test set
  - Benchmark: Simple prediction (Price_t = Price_t+1)

	Open	High	Low	Close	Adj Close	Volume	Risk_Free_Close	SP500_Close
Date								
1993-01-29	43.968750	43.968750	43.750000	43.937500	24.763739	1003200	0.06390	438.779999
1993-02-01	43.968750	44.250000	43.968750	44.250000	24.939867	480500	0.06380	442.519989
1993-02-02	44.218750	44.375000	44.125000	44.343750	24.992710	201300	0.06460	442.549988
1993-02-03	44.406250	44.843750	44.375000	44.812500	25.256897	529400	0.06450	447.200012
1993-02-04	44.968750	45.093750	44.468750	45.000000	25.362576	531500	0.06390	449.559998
...	...	...	...	...	...	...	...	...
2024-05-20	529.570007	531.559998	529.169983	530.059998	530.059998	37764200	0.04437	5308.129883
2024-05-21	529.280029	531.520020	529.070007	531.359985	531.359985	33437000	0.04414	5321.410156
2024-05-22	530.650024	531.380005	527.599976	529.830017	529.830017	48390000	0.04434	5307.009766
2024-05-23	532.960022	533.070007	524.719971	525.960022	525.960022	57211200	0.04475	5267.839844
2024-05-24	527.849976	530.270020	526.880005	529.440002	529.440002	41258400	0.04467	5304.720215

Strategy

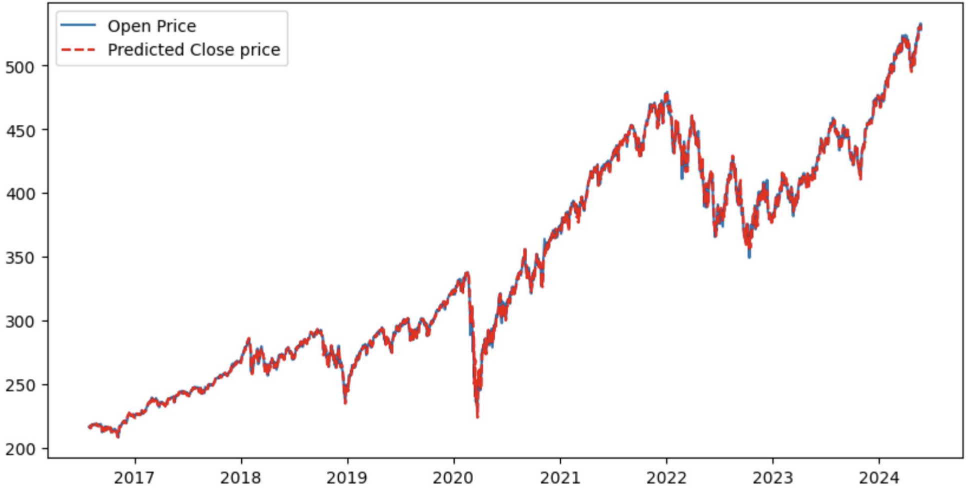
Prediction → Action → Final Price (deal price)



Date	Open price	Close price	Final price	Action	Return
2016-07-29	216.460007	217.119995	216.713258	Long	0.001170
2016-08-01	217.190002	216.940002	217.063536	Short	0.000583
2016-08-02	216.649994	215.550003	215.550003	Long	-0.005077
2016-08-03	215.479996	216.179993	215.539231	Long	0.000275
2016-08-04	216.309998	216.410004	216.142362	Short	0.000776
...	...	...	...	...	...
2024-05-20	529.570007	530.059998	530.059998	Short	-0.000924
2024-05-21	529.280029	531.359985	529.468332	Long	0.000356
2024-05-22	530.650024	529.830017	530.767462	Long	0.000221
2024-05-23	532.960022	525.960022	529.332735	Short	0.006853
2024-05-24	527.849976	529.440002	529.440002	Short	-0.003003

Performance

- Period: 07/29/2016 - 05/24/2024
- Benchmark: single buy-and-hold approach on SPY
- Direction Accuracy: 68.66%
- Annualized Return
  - Strategy: 6.29%
  - Benchmark: 12.09%
- Volatility
  - Strategy: 0.09
  - Benchmark: 0.18
- Sharpe Ratio
  - Strategy: 0.63
  - Benchmark: 0.65



Resource

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- Polamuri, S. R., Srinivas, K., & Mohan, A. K. (2019). Stock Market Prices Prediction using Random Forest and Extra TreeRegression. International Journal of Recent Technology and Engineering (IJRTE), 8(3), 1224-1228.https://doi.org/10.35940/ijrte.C4314.098319
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