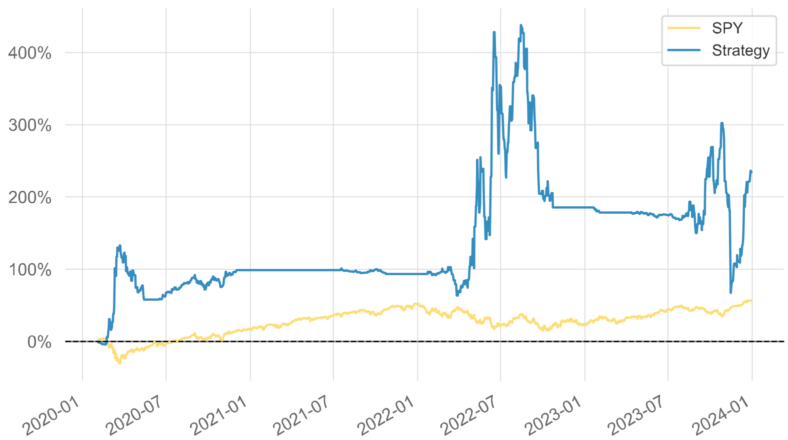
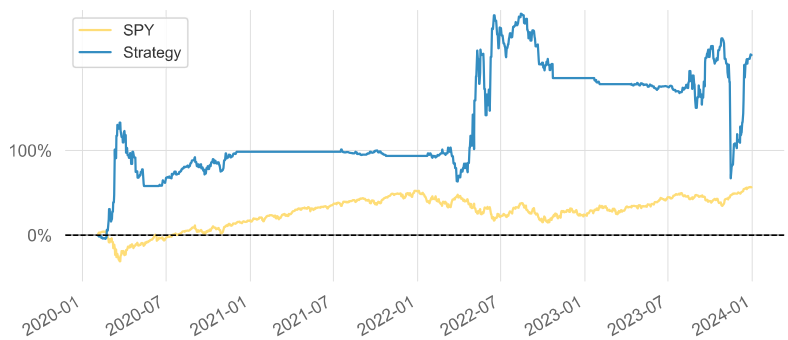
MachineLearningTrader Compared to SPY 4 Feb, 2020 - 30 Dec, 2023

Benchmark is SPY | Generated by QuantStats (v. 0.2.0)

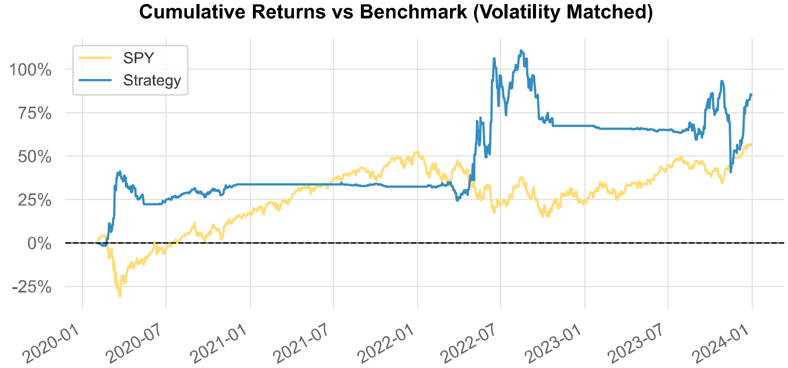
Cumulative Returns vs Benchmark



Cumulative Returns vs Benchmark (Log Scaled)



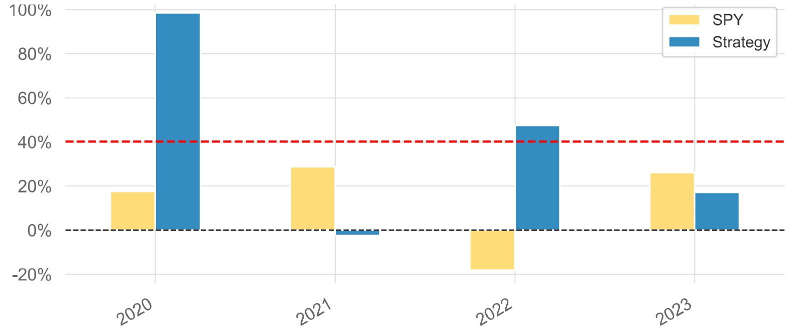
Cumulative Returns vs Benchmark (Volatility Matched)



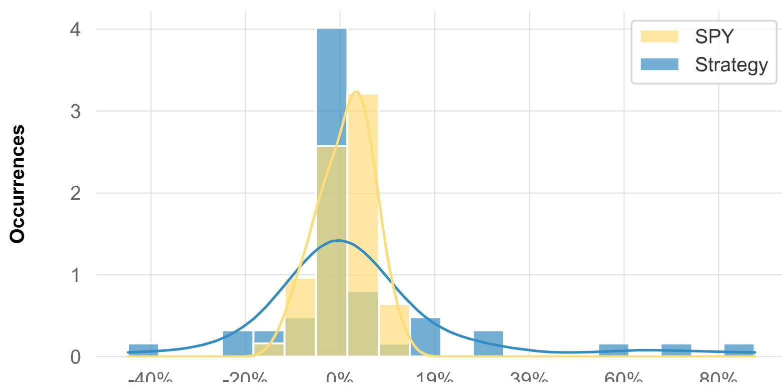
Key Performance Metrics

Metric	SPY	Strategy
Risk-Free Rate	5.24%	5.24%
Time in Market	69.0%	38.0%
Total Return	56.41%	234.46%
CAGR% (Annual Return)	12.14%	36.24%
Sharpe	0.39	0.72
ROMaD	0.36	0.53
Corr to Benchmark	1.0	-0.21
Prob. Sharpe Ratio	22.69%	34.06%
Smart Sharpe	0.37	0.68
Sortino	0.55	1.22
Smart Sortino	0.51	1.15
Sortino/√2	0.39	0.86
Smart Sortino/√2	0.36	0.81
Omega	1.25	1.25
Max Drawdown	-33.68%	-68.94%
Longest DD Days	708	768
Volatility (ann.)	22.79%	59.61%
R^2	0.05	0.05
Information Ratio	0.03	0.03
Calmar	0.36	0.53
Skew	-0.57	2.97
Kurtosis	16.09	44.13
Expected Daily	0.03%	0.08%
Expected Monthly	0.96%	2.6%
Expected Yearly	11.83%	35.23%
Kelly Criterion	6.02%	-1.49%
Risk of Ruin	0.0%	0.0%
Daily Value-at-Risk	-1.92%	-5.0%
Expected Shortfall (cVaR)	-1.92%	-5.0%

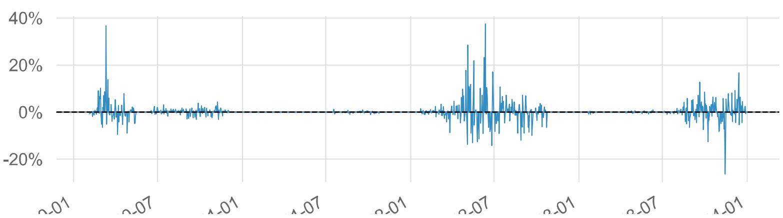
EOY Returns vs Benchmark



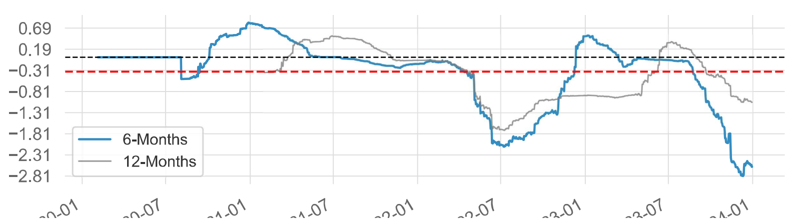
Distribution of Monthly Returns



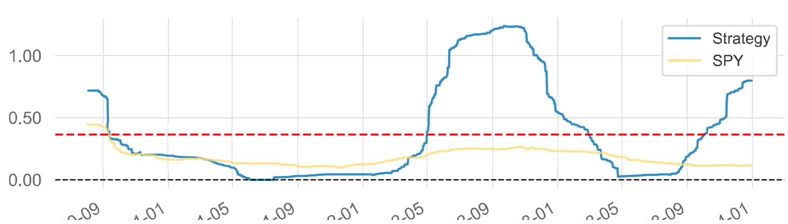
Daily Returns



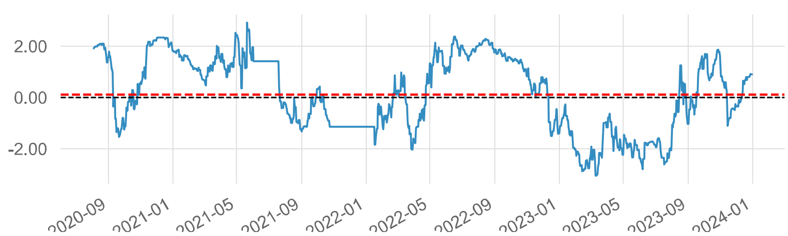
Rolling Beta to Benchmark



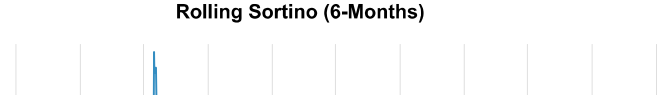
Rolling Volatility (6-Months)



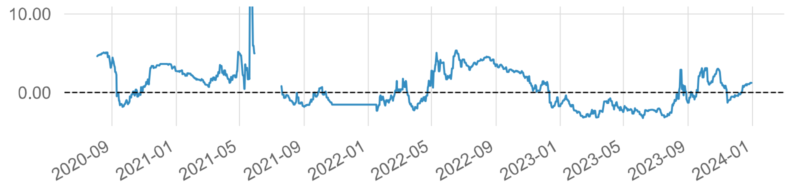
Rolling Sharpe (6-Months)



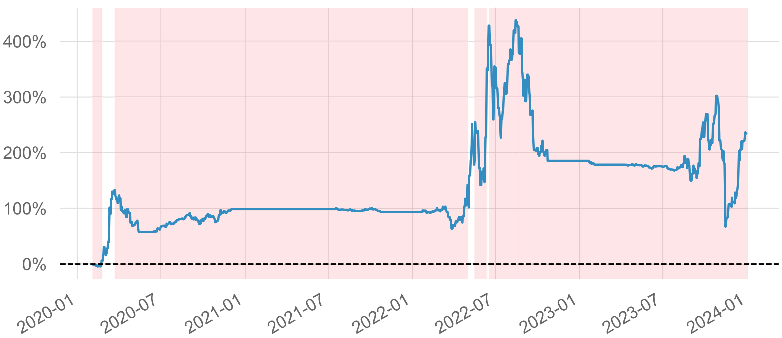
Rolling Sortino (6-Months)



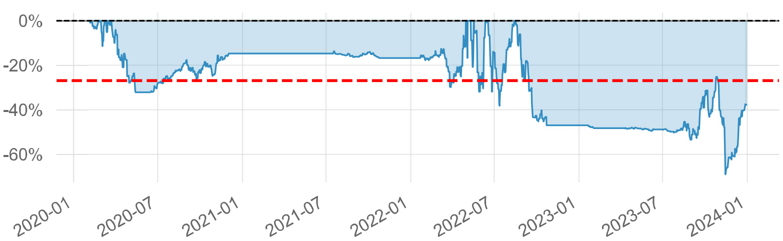
Metric	SPY	Strategy
Max Consecutive Wins	4	4
Max Consecutive Losses	4	3
Gain/Pain Ratio	0.12	0.29
Gain/Pain (1M)	0.64	1.15
Payoff Ratio	0.97	0.93
Profit Factor	1.12	1.29
Common Sense Ratio	1.11	1.48
CPC Index	0.58	0.61
Tail Ratio	0.99	1.15
Outlier Win Ratio	12.84	9.16
Outlier Loss Ratio	6.32	2.5
MTD	4.57%	59.06%
3M	11.64%	1.95%
6M	9.33%	21.59%
YTD	26.21%	17.15%
1Y	25.88%	17.15%
3Y (ann.)	10.67%	19.59%
5Y (ann.)	12.14%	36.24%
10Y (ann.)	12.14%	36.24%
All-time (ann.)	12.14%	36.24%
Best Day	9.06%	37.47%
Worst Day	-10.94%	-26.38%
Best Month	12.7%	87.58%
Worst Month	-12.44%	-44.83%
Best Year	28.77%	98.55%
Worst Year	-18.16%	-2.5%
Avg. Drawdown	-2.17%	-19.36%
Avg. Drawdown Days	22	116
Recovery Factor	1.63	2.71
Ulcer Index	0.1	0.31
Serenity Index	0.29	0.35
Avg. Up Month	5.31%	13.78%
Avg. Down Month	-3.9%	-8.6%



Strategy - Worst 5 Drawdown Periods

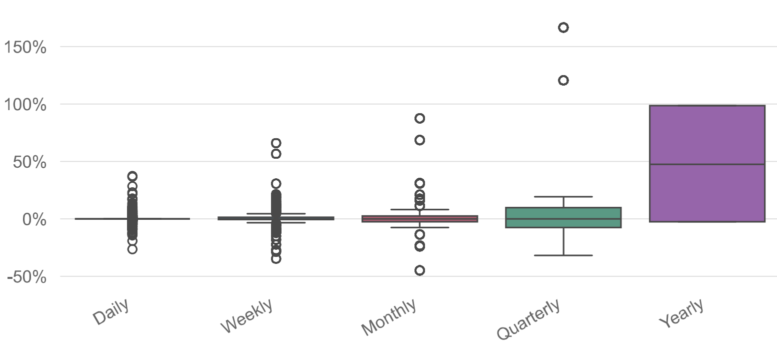


Underwater Plot



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2020	0.00	30.82	68.68	-23.87	-5.98	4.48	5.74	8.08	-3.85	-3.01	11.39	1.35
2021	0.00	0.00	0.00	0.00	0.00	0.00	-0.22	-1.69	2.53	-3.06	0.00	0.00
2022	0.48	1.03	-13.54	21.00	17.48	87.58	2.69	-13.60	-23.20	-7.53	0.00	0.00
2023	-1.51	-1.00	0.00	-0.55	-0.41	-0.22	-2.34	-6.92	31.21	16.17	-44.83	59.06

Strategy - Return Quantiles



Metric	SPY	Strategy
Win Days	53.77%	51.21%
Win Month	63.83%	47.22%
Win Quarter	68.75%	50.0%
Win Year	75.0%	75.0%
Beta	-	-0.56
Alpha	-	0.56
Correlation	-	-21.29%
Treynor Ratio	-	-411.61%

EOY Returns vs Benchmark

Year	SPY	Strategy	Multiplier	Won
2020	17.60%	98.55%	5.60	+
2021	28.77%	-2.50%	-0.09	-
2022	-18.16%	47.47%	-2.61	+
2023	26.21%	17.15%	0.65	-

Worst 10 Drawdowns

Started	Recovered	Drawdown	Days
2022-08-16	2023-12-30	-68.94%	502
2022-06-19	2022-08-13	-38.16%	56
2020-03-24	2022-04-30	-32.14%	768
2022-05-19	2022-06-11	-31.94%	24
2022-05-12	2022-05-17	-20.83%	6
2022-05-03	2022-05-04	-16.81%	2
2020-03-01	2020-03-07	-11.40%	7
2020-03-12	2020-03-14	-5.17%	3
2020-02-05	2020-02-22	-3.67%	18
2020-03-18	2020-03-21	-2.00%	4

Parameters Used

Parameter	Value
symbol	SPY
cash_at_risk	0.5