



## Boltzmann Strategy

### strategy description

The Boltzmann strategy is a pure artificial intelligence (AI) strategy. Deep learning techniques based on Boltzmann machines and advanced machine learning classification algorithms are used to identify prospective winners and losers in a universe of 100 blue chip stocks on a monthly basis given their performances of the last 5 months. The strategy is hedged by being always neutral: the same amount is invested long in winner stocks as short in looser stocks.

### Key facts

**Currency** : USD  
**Instruments** : single stocks of the S&P100 index  
**Liquidity** : daily  
**Risk factors** : long positions, short positions, no derivatives  
**Trading** : algorithmic, with human surveillance, only 12 trades per year

### statistics (2008–2018)

**Average net return** : 18.32% (S&P500: 6.61%)  
**Average volatility** : 10.11% (S&P500: 17.99%)  
**Average Sharpe Ratio** : 1.65  
**Maximum draw-down** : 7.60%

### historical performance

Year	P/L strategy	P/L S&P500	Vola strategy	Vola S&P500	Max. drawdown	Sharpe ratio
2008	24.28%	-38.49%	16.80%	40.97%	7.60%	1.34
2009	48.68%	23.45%	13.01%	27.29%	0.84%	3.71
2010	15.22%	12.78%	8.14%	18.05%	2.98%	1.83
2011	2.47%	0.00%	4.73%	23.37%	3.25%	0.48
2012	13.55%	13.32%	9.35%	12.88%	5.74%	1.43
2013	15.33%	29.73%	7.02%	10.97%	1.43%	2.17
2014	8.30%	11.41%	6.48%	10.91%	2.50%	1.26
2015	30.10%	-0.76%	12.61%	17.05%	2.58%	2.36
2016	16.95%	9.53%	12.51%	12.61%	4.86%	1.31
2017	14.93%	19.41%	12.06%	6.68%	4.36%	1.14
2018	11.69%	-7.71%	8.48%	17.06%	5.70%	1.10