

Algotrading Strategy

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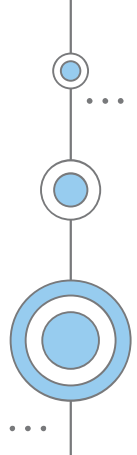
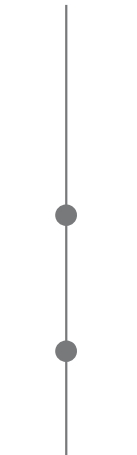




01

Our Approach

Identify, Decide, Manage Risk,
Rebalance



Our Persona



We approached this project based on a few assumptions of our persona, Joe:

- Risk Appetite: Moderate-High
- Intends to accumulate for retirement plan
- Works full-time, part-time trader
- Technical analyst

IDMR



Identify

(risk & accessibility)

US Stock Market
Equities
Beta: >1.5
Market Cap: Large
IPO 2017 and earlier

...



Decide

(buy/sell/hold)

Strategy:
Bollinger Band + RSI

...



Manage Risk

(stop loss/take profit)

Moderate Risk
Portfolio stop loss
@ -20%

...



Rebalance

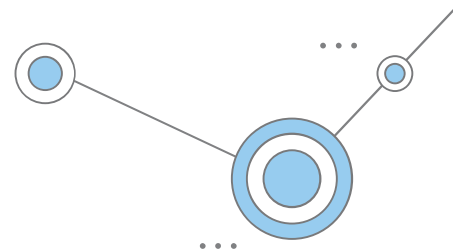
(pyramid/portfolio)

5 Different Sectors
Equally distributed

...



Identified Stocks



Concentrated Bets

Stocks from single sector

Right stocks
Hype
Higher volatility



Diversified Stocks

Stocks from different sectors

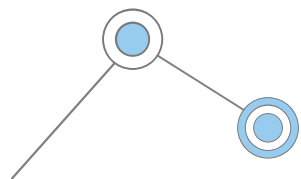
Some exposure
Sector rotation
Moderate volatility



Asset Mix

Stocks and Indices
(e.g. ETF/S&P)

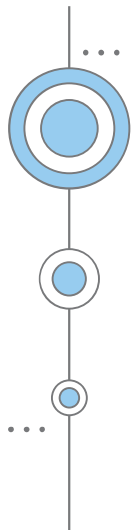
Wide exposure
Less noise
Affordable



Identified Stocks

Data as of 5 Oct 2021

Equity	Symbol	Sector	Volume	Market Cap	Beta (3y)
Citigroup Inc.	C	Financials	18,298,348	144.49B	1.87
The Boeing Company	BA	Industrials	10,131,450	131.175B	1.57
Shopify Inc.	SHOP	Technology	1,168,684	163.466B	1.50
Macy's, Inc.	M	Consumer Cyclical	11,298,591	7.089B	2.09
BioCryst Pharmaceuticals, Inc	BCRX	Healthcare	2,694,412	2.379B	2.58



02 Strategy

Hypotheses

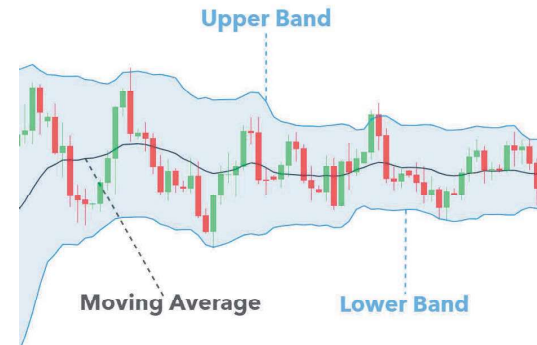


Trading Strategy



Bollinger Band - Main indicator

- **Middle Band** = SMA (Simple moving average)
- **Upper and Lower Bands**
= SMA \pm 2 standard deviations
- Relies on concept of Mean Reversion
- Band widens when market is more volatile as standard deviation is a measure of volatility



RSI (Relative Strength Index) - Supporting signal

- Momentum indicator for trend reversal
- RSI above 70 indicates overbought and RSI below 30 indicates oversold



Current Price vs Previous Close - Confirmation

- Check that the Direction of Change in price is in line with both indicators

Trading Strategy



		Buy (Long signal)	Sell (Short signal)
1. Signal	Bollinger Band	Prev Close (D-2) < Lower Band	Prev Close (D-2) > Upper Band
	RSI	RSI < 25	RSI > 75
	Direction of Change	Current ≥ Prev Close (D-1)	Current ≤ Prev Close (D-1)
2. Execute	Bollinger Band	Current ≥ Lower Band	Current ≤ Upper Band



Trading Strategy

		Buy (Long signal)
1. Signal	Bollinger Band	Prev Close (D-2) < Lower Band
	RSI	RSI < 25
	Direction of Change	Current ≥ Prev Close (D-1)
2. Execute	Bollinger Band	Current > Lower Band





Managing Risks

3. Exit	Buy (Long)	Sell (Short)	Overall
Stop Loss	Current \leq Prev 30D Low	Current \geq Prev 30D High	Portfolio \leq -20%
Take Profit	Current \geq Middle Band	Current \leq Middle Band	-

Managing Risks



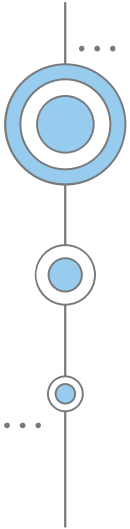
3. Exit	Buy (Long)
Stop Loss	Current \leq Prev 30D Low
Take Profit	Current \geq Middle Band



03

Algo Code

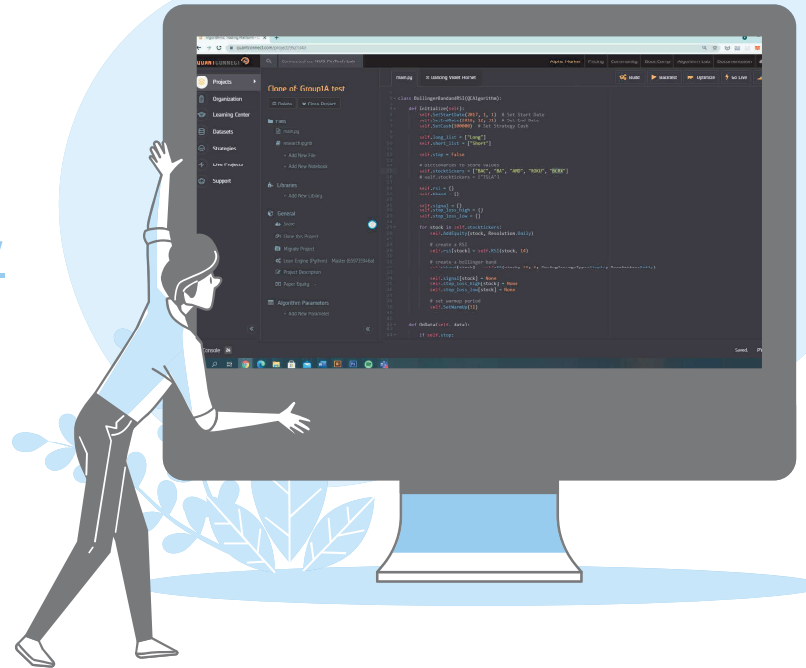
Demonstration of code & Results



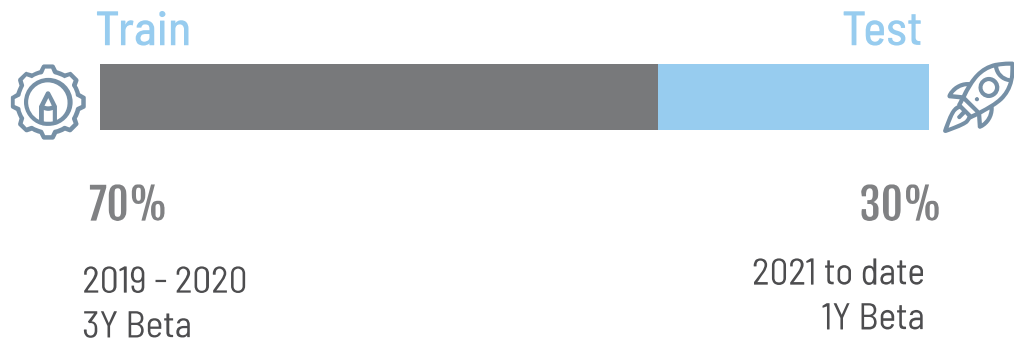
Code on QuantConnect

View Code Here:

[https://www.quantconnect.com/
project/9485010](https://www.quantconnect.com/project/9485010)



Train and Test



Results

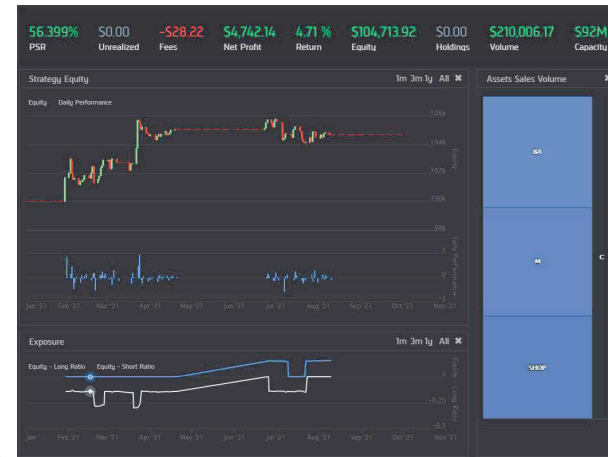
Train

2019 - 2020



Test

2021 to date



Train : 2019 – 2020

69.843%	\$0.00	-\$158.92	\$10,731.64	10.57 %	\$110,572.72	\$0.00	\$314,084.60	\$44M
PSR	Unrealized	Fees	Net Profit	Return	Equity	Holdings	Volume	Capacity

Overall Statistics

[Download Results](#)

PSR	0	Sharpe Ratio	1.304
Total Trades	20	Average Win	2.07%
Average Loss	-0.54%	Compounding Annual Return	5.146%
Drawdown	1.700%	Expectancy	1.897
Net Profit	10.573%	PSR	69.843%
Loss Rate	40%	Win Rate	60%
Profit-Loss Ratio	3.83	Alpha	0.045
Beta	-0.009	Annual Standard Deviation	0.033
Annual Variance	0.001	Information Ratio	-0.803
Tracking Error	0.233	Treynor Ratio	-4.835
Total Fees	\$158.92	Estimated Strategy Capacity	\$44000000.00
Lowest Capacity Asset	TRV R735QTJ8XC9X		

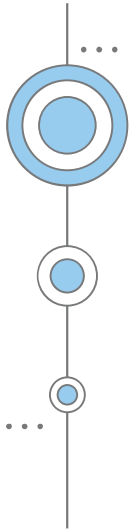
Test : 2021 to date

56.399%	\$0.00	-\$28.22	\$4,742.14	4.71 %	\$104,713.92	\$0.00	\$210,006.17	\$92M
PSR	Unrealized	Fees	Net Profit	Return	Equity	Holdings	Volume	Capacity

Overall Statistics

[Download Results](#)

PSR	0	Sharpe Ratio	1.189
Total Trades	14	Average Win	1.13%
Average Loss	-0.50%	Compounding Annual Return	6.258%
Drawdown	1.700%	Expectancy	1.338
Net Profit	4.714%	PSR	56.399%
Loss Rate	29%	Win Rate	71%
Profit-Loss Ratio	2.27	Alpha	0.058
Beta	-0.031	Annual Standard Deviation	0.044
Annual Variance	0.002	Information Ratio	-0.994
Tracking Error	0.128	Treynor Ratio	-1.72
Total Fees	\$28.22	Estimated Strategy Capacity	\$92000000.00
Lowest Capacity Asset	BA R735QIJ8XC9X		



04 Review

Challenges/Opportunities



Where we could have done better?

Challenges

- Avoiding false signals during strong trends
 - Result in reduced Win Rate
- Analyzing more candles for confirmation on reverse trend



Where we could have done better?

Challenges

- Avoiding false signals during strong trends
 - Result in reduced Win Rate
- Analyzing more candles for confirmation on reverse trend

Opportunities

- Rebalance: Setting a threshold for each asset allocation at any given point in time
- Algo to update the stock list
 - Remove stocks in strong trends
 - Add stocks with high beta

Thank you

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