Printing Money II

An Expert System for picking stocks tuned via Genetic Algorithms

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Purpose

This paper describes a system for picking stocks that uses multiple Expert Systems for selecting stocks. These systems were created from talking to experts as well as many books on the various methods of finding stocks. The primary data used is daily end-of-day trading data and the picks are generated for the next trading day. Four basic methods are used for picking; Breakouts, Crossovers, Events and Momentum. While not day trading, these picks are expected to reach their trading goals with one to two weeks time.

The problem with most expert systems is they have a multiple parameters that must be tuned for best performance. A Genetic Algorithm is used to accomplish this task. Different Genetic Algorithm is also used to provide a confidence level for each trade and this data is used to drive position sizing.

Back tested and forward tested performance.

Name	Back test				Forward test			
	Months	Profit/Trade	Trades	Success	Months	Profit/Trade	Trades	Success
Alpha	6	4.789%	719	53%	2	10.86%	46	74%
Aroon	6	2.067%	217	57%	2	4.47%	49	71%
Breakout	12	1.419%	171	71%	2	4.05%	21	62%
Exponential Close	6	1.527%	79	51%	2	2.43%	24	67%
Growth	6	4.027%	36	67%	2	4.05%	21	62%
Growth EMA	6	2.607%	162	65%	2	6.12%	16	69%
MACD Crossover	6	1.439%	28	29%	2	1.10%	26	58%
New High	12	2.973%	104	72%	2	2.35%	9	78%
RSI Crossover	6	1.225%	453	90%	2	4.98%	55	67%
Sharpe Ratio	6	2.423%	90	56%	2	3.41%	69	70%
Turtle Breakout	6	6.110%	16	94%	2	1.49%	52	60%
Up	6	0.202%	188	52%	2	6.12%	20	80%
Up2	6	5.644%	325	71%	2	4.33%	28	75%

The best way to use this data is not to read all of it. There is too much. So just pick one or two filters (e.g. New High and Growth) which are easy to understand and follow the processing of just these.

Data Flow

There are two types of data used to pick interesting stocks. The pricing data (open, close, high, low, volume) is downloaded from a commercial source ever day after the marker closes. A FTP transfer is used to retrieve the daily data. This data is stored in a local database. Once a week, fundamental data is downloaded from open sources on the internet and stored in another local database. The fundamental data changes a lot less often so it is updated only once a week. Once all the data has been downloaded, a set of stock screens are run that look for a particular type of interesting stock. If we are looking for stocks making new highs for the year, that is one type of screen., breakout stocks are another. Each screen consists of filters that either pass or reject the stock. Some typical filters may be that the stock must be currently trading, it must have a minimum closing price and there must some minimum volume. Some of the filters are used in multiple screens and some are specific for each screen. The filters and screens will be discussed in detail later on.
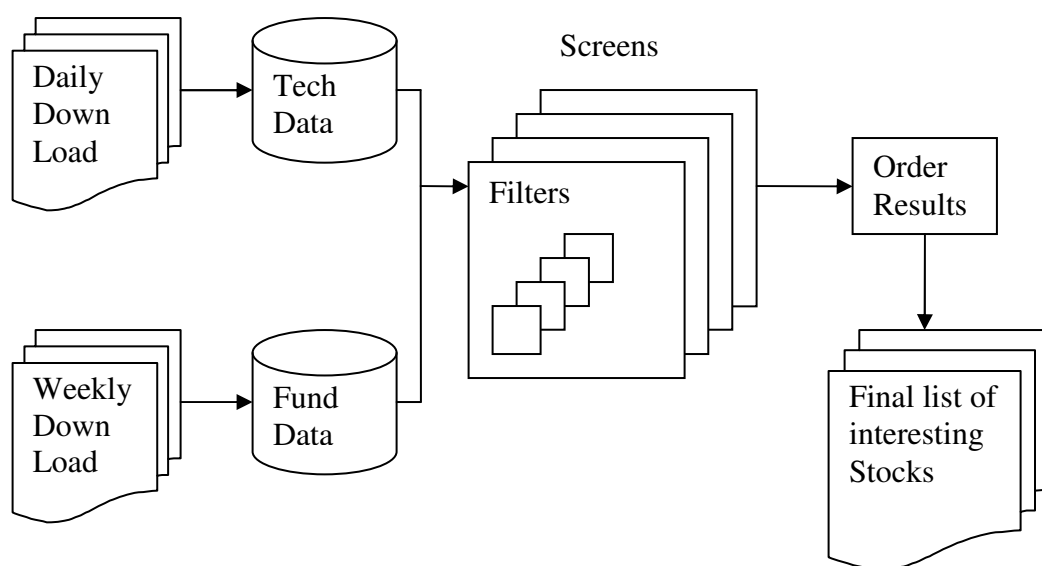
Each screen will produce a set of interesting stocks for consideration. These are all gathered up and based on a technical rating a fundamental rating and the back testing results; the stocks are sorted into a list. This is the list that is used to determine stocks that may be purchased.

Basic Filters
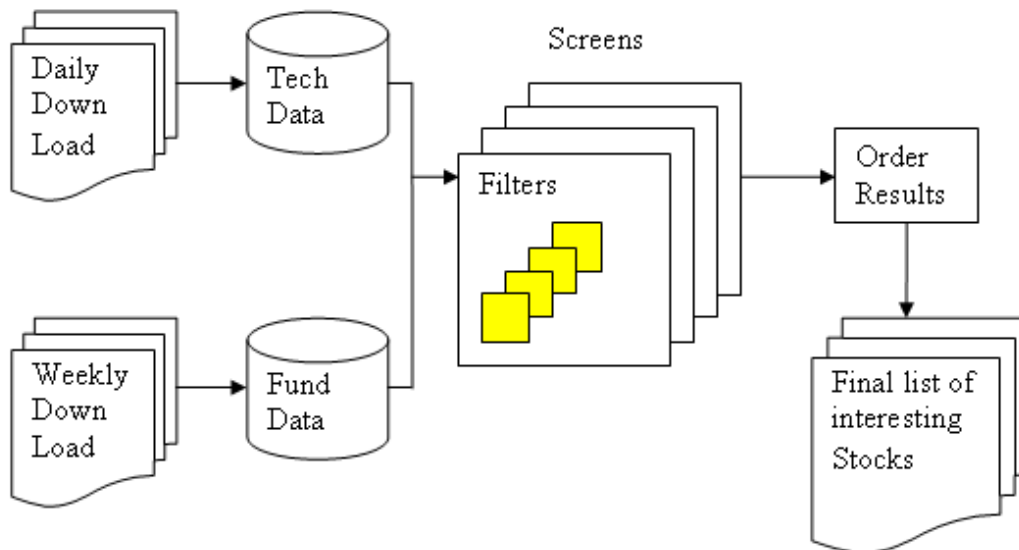
A filter is used to cull the list of stocks that make up a screen while a screen is a trading philosophy like 'stocks making new highs'.

Some of the basic filters are:
- Price – sets a floor on the minimum closing price
- Volume – sets a floor on the minimum average daily volume
- Price x Volume – sets a floor on the minimum price x volume
- Increasing Volume
- High Average Volume
- Price Moving Up
- Relative Gain against some index reference (Alpha)
- N Up days out of M days
- High Volatility
- Safety Check

Additional Ones

- Alpha
- Aroon
- `Close2CloseUpDaysInHalfs`
- `ExpotentialClose`
- `MACDSignalCross`
- `MinimumClose`
- `MinimumPriceRatio`
- `MinimumVolume`
- `MinimumVolumeRatio`
- `NewHigh`
- `NotPreviousHigh`
- `SkipBigPriceGain`
- `SkipGapUp`
- `UpDaysInHalfs`
- `UpMovingAverageDays`
- `UpMovingAverageSet`
- `UpMovingAverageSetsEMA`
- `Volatility`
- `VolumeUpDaysInHalfs`
- `WeeklyAnnualReturn`
- `WeeklyAnnualSharpeRatio`

Low Price

A price filter is used to set a lower limit on the closing price of a stock.
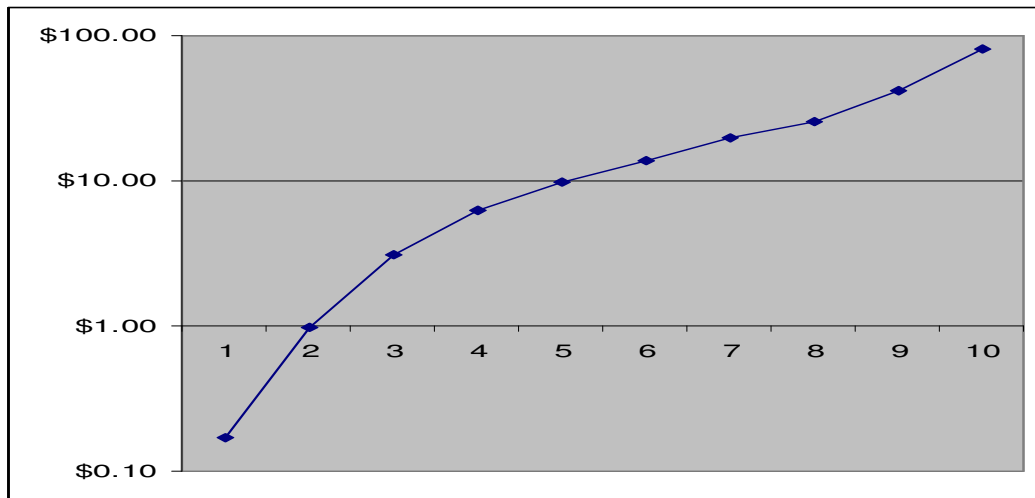
Here is a graph of the closing prices of all the stocks that are currently trading. The closing prices are divided into 10% groups. This shows that the bottom 10% are below about $0.17 and the bottom 20% are below about $1.00.
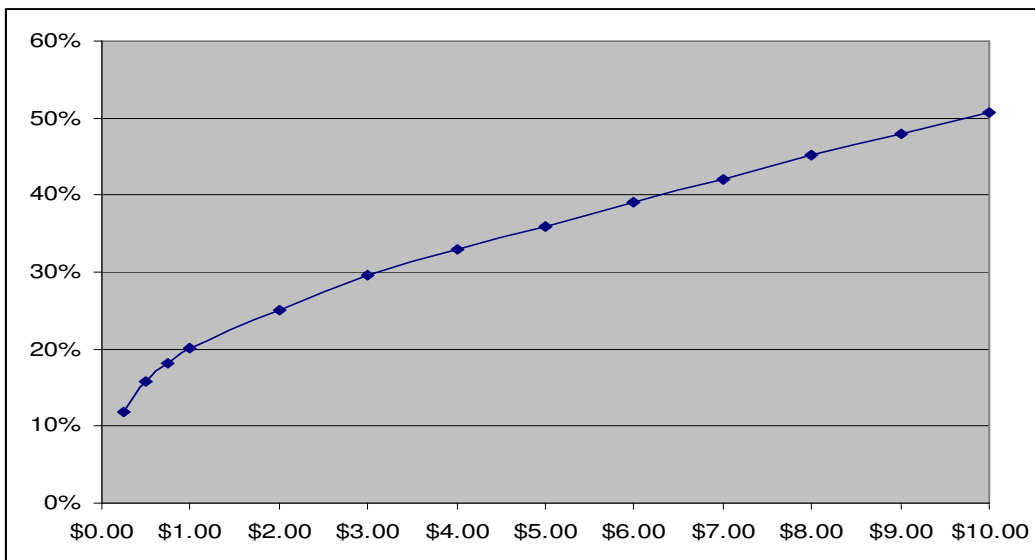
This chart shows the percent of stocks that are below a dollar value. Fifty percent of the stocks closed at below $10 while twenty percent closed below $1.

The actual filter we use is all the data in the last 100 trading days must be above $.50.

Low Volume

A filter on the minimum average daily volume is a good idea because if you want to trade 500 shares you don't want to be the only seller that day.
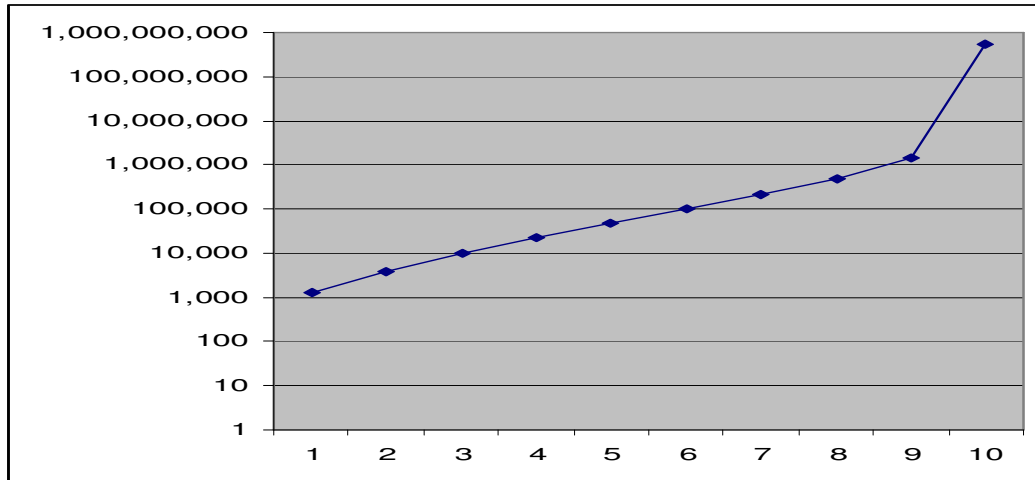
Here is a graph of the average daily volume of all the stocks that are currently trading. The volumes are divided into 10% groups. This shows that the bottom 10% are around 1,000 share traded and the bottom 30% are around 10,000 shares.
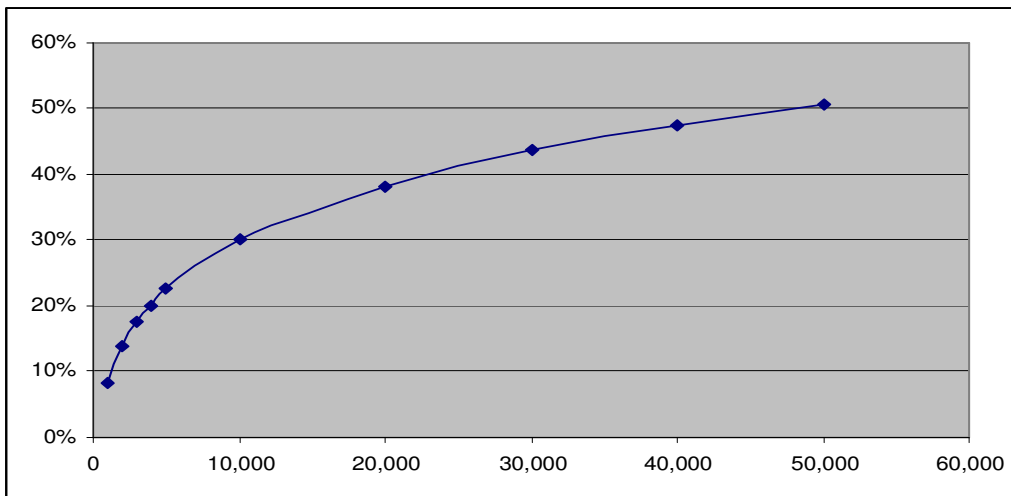
This chart shows the percent of stocks that are below trade volume. Fifty percent of the stocks trade less than 50,000 shares while twenty percent trade below 5,000.

Even at 5000 shares traded, your trade would represent 10% of the volume. If you sold 10% of the total volume for the day you would probably cause the price to fall as you were selling. Not a good idea if you want the best price.

The actual filter we use is the average volume in the last 60 days must be over 10,000 shares.We allow the 60 days (about 3 months) to be sure there is volume more than the last 3 days. Volume is the bars at the bottom of the candlestick price chart.

This stock pass the 10,000 shares in 60 days filter.

Arch Coal Inc. (ACI) on 10/21/09
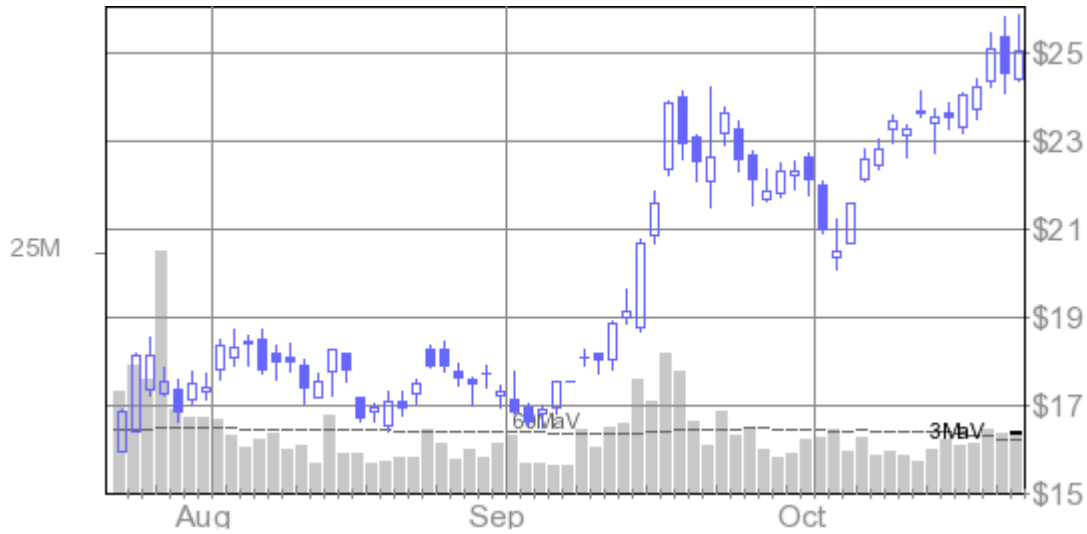
This is an example of volume that was not good enough.

Acme United Corp. (ACU) on 10/21/09
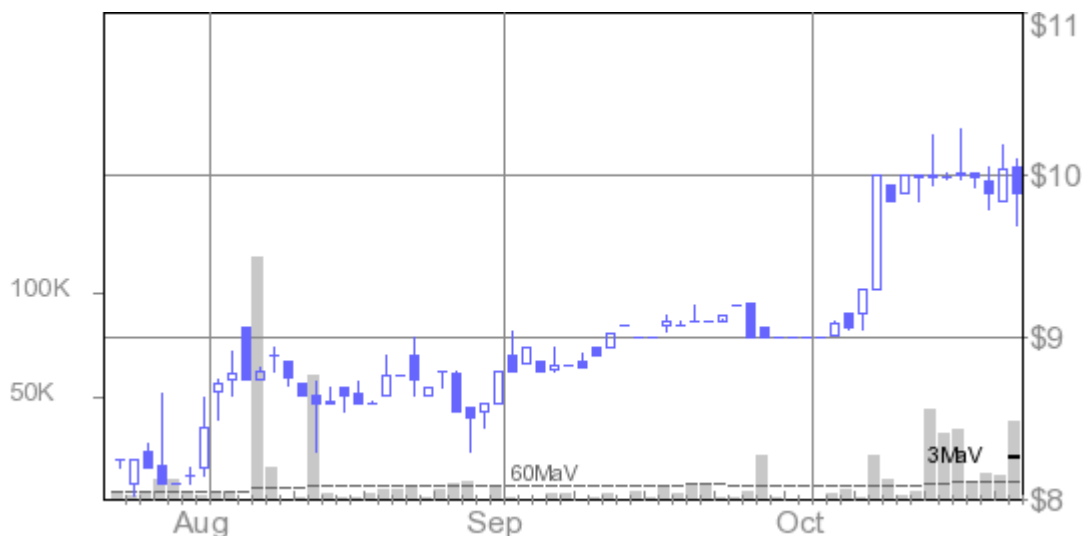
Up Volume

Not only do we want good volume, we would like the volume to be recent so that inventors are actively trading the stock.

This is a check that the last 3 days of volume are greater than the average of the previous 60 days.

Alcon Inc. (ACL) on 10/21/09
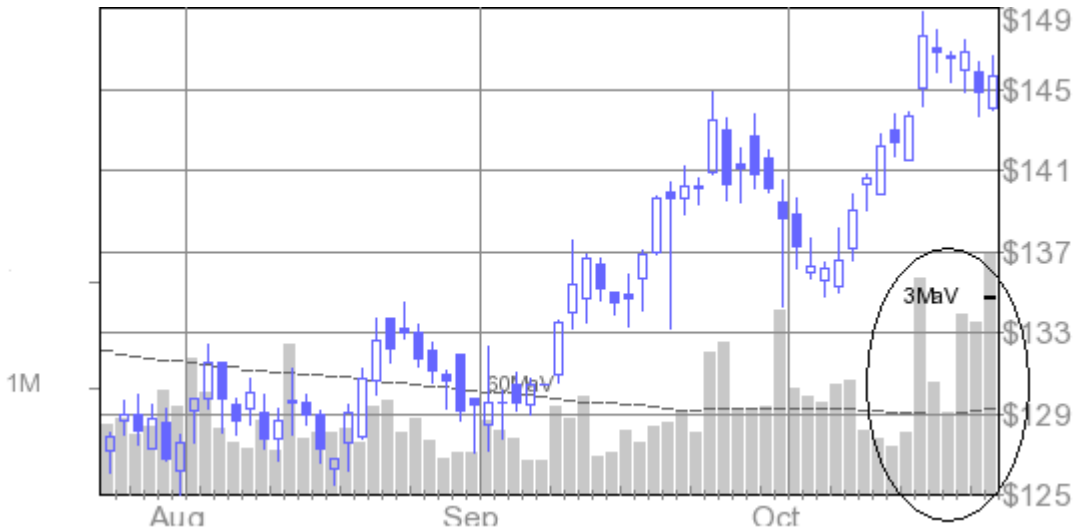
This is an example of failing this filter.

Assured Guaranty Ltd. (AGO)on 10/21/09
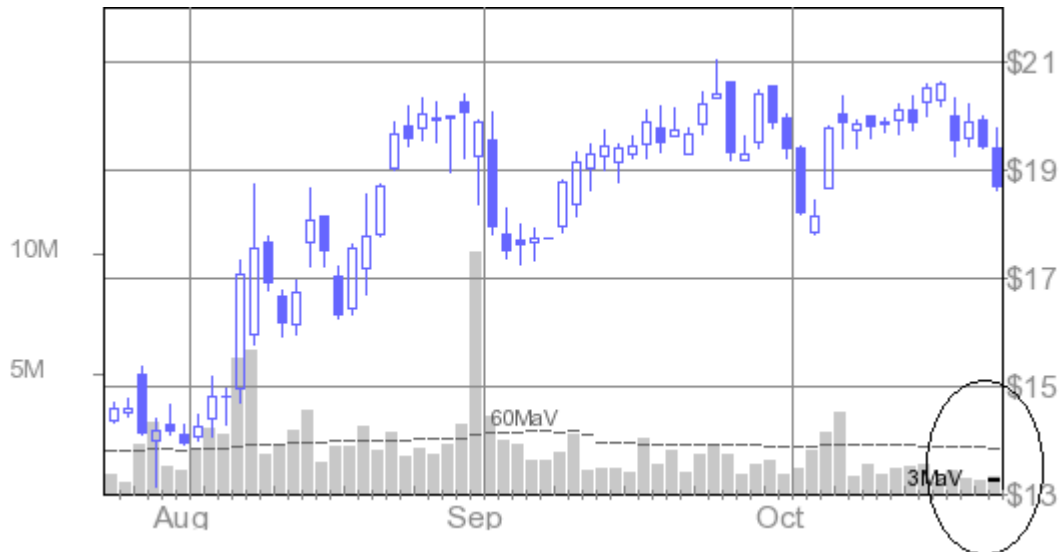
Price and Volume

Suppose you had $10,000 to invest in a single trade (1/10 of a $100,000 portfolio). You don't want that to be an appreciable percentage of the total dollars traded that day. If you are, when you bought the shares the price probably climbed and if you sold the price probably dropped. You want your trade to be transparent to the price of the stock.

I don't have access to each trade so this is simplified as closing price x volume of shares traded. This is a close approximation of the amount of money that changed hands that day. You could get slightly better by averaging the low and high and multiplying by the volume.

Again think of that $10,000. If you want to just be a blip on the radar screen of the stock, you may want your trade to be no more than 1/10 of a percent of the dollars traded. That means that you need a stock that trades at least $1,000,000 of stock a day on average.
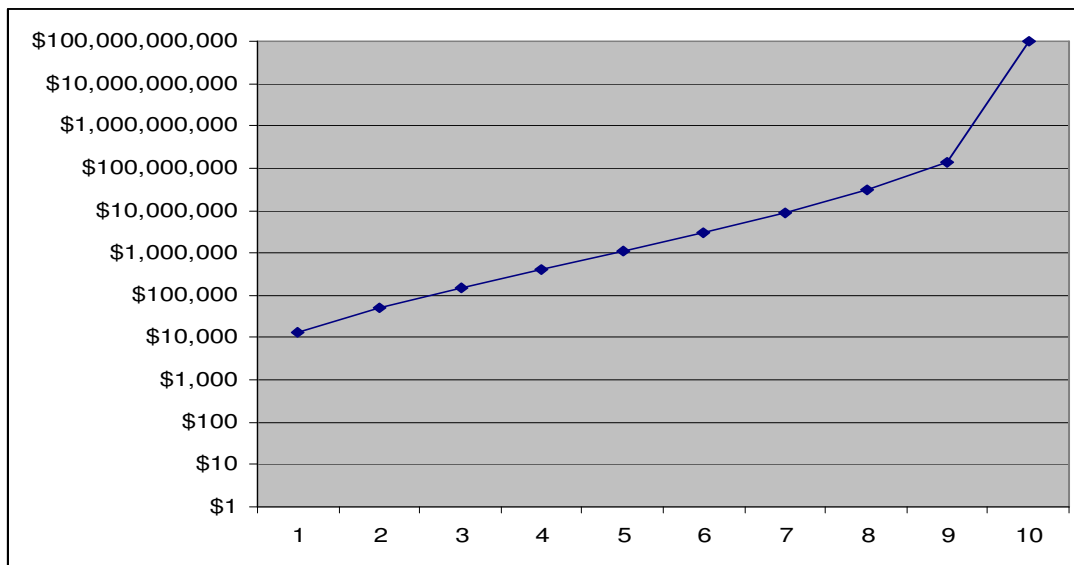
Here is a graph of the closing price times the average daily volume of all the stocks that are currently trading. The data is divided into 10% groups. This shows that the bottom 10% are around $10,000 of money moving in the stock. The point where our $10,000 trade is 1/10 of one percent is $10,000,000. Only 30% of the stocks meet this criteria.
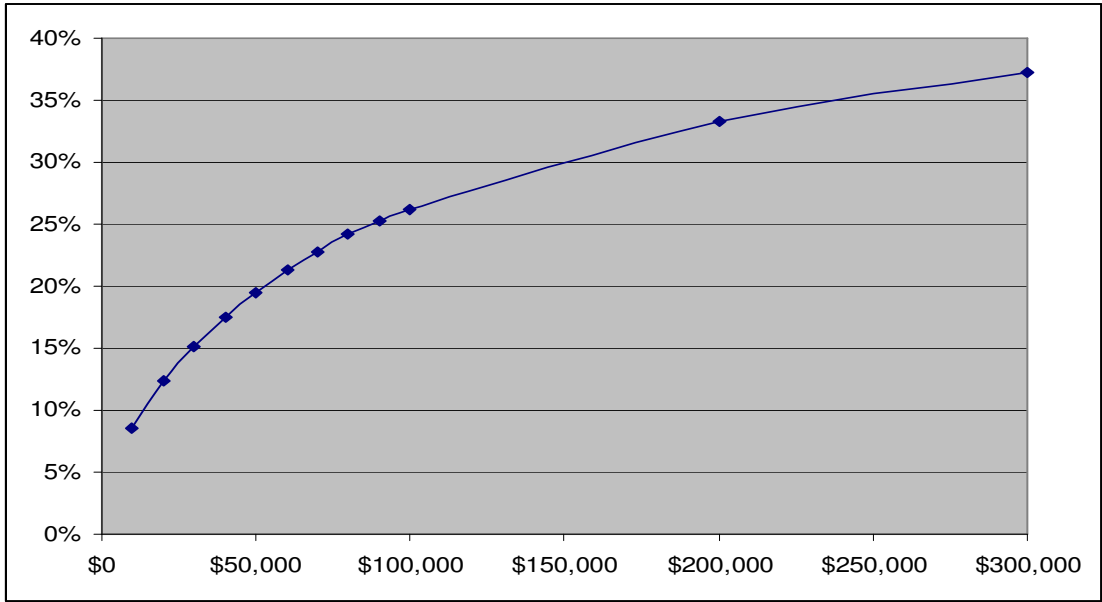
If smaller trades are used or you are willing to be a bigger percent of the volume, then more stocks will qualify for a trade. With a $5,000 and 10% of the total amount of money traded would be $50,000. This leaves eighty percent of the stocks available.

Up Day

As we are expecting our stock prices to rise, we are trading 'long'. Therefore we would like the last trade to close higher than it opened.

This stock passes this filter.

Brigham Exploration Co. (BEXP) on 10/21/09
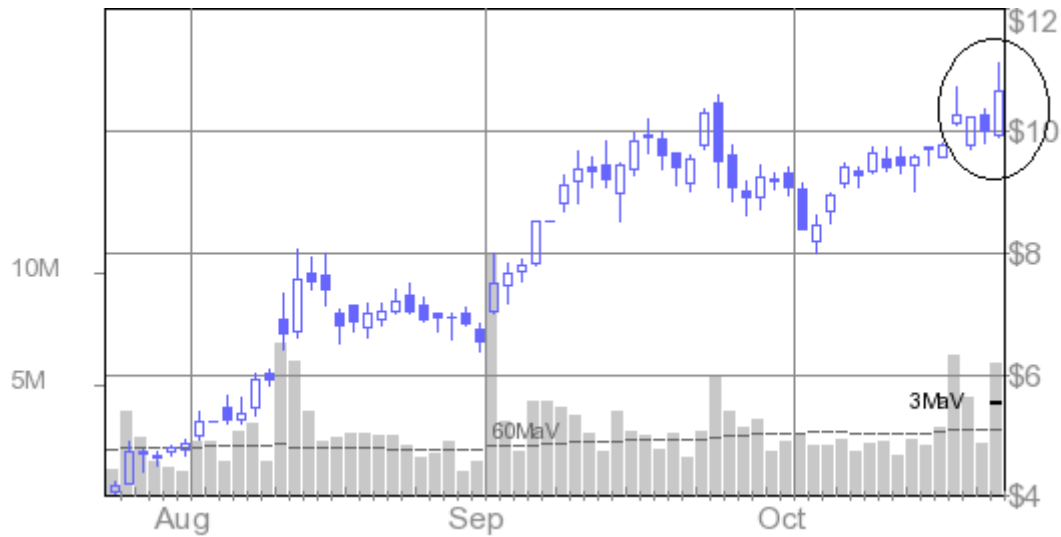
This is an example of failing this filter.

American Electric Power Co. Inc. (AEP) on 10/21/09
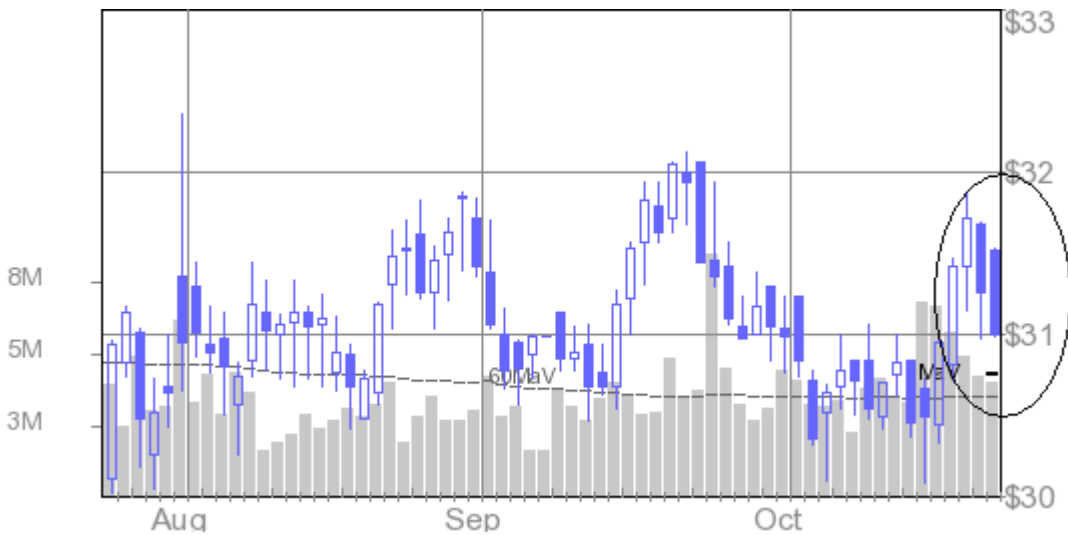
Majority Up Days

A variation of the 'Up Day' theme is to have a majority of Up days in the last several days. A typical configuration of this filter is to have at least three Up days in the last five days. This should indicate that the stock is moving up in general.

This stock passes this filter.

Buckeye Partners LP (BPL) on 11/10/09
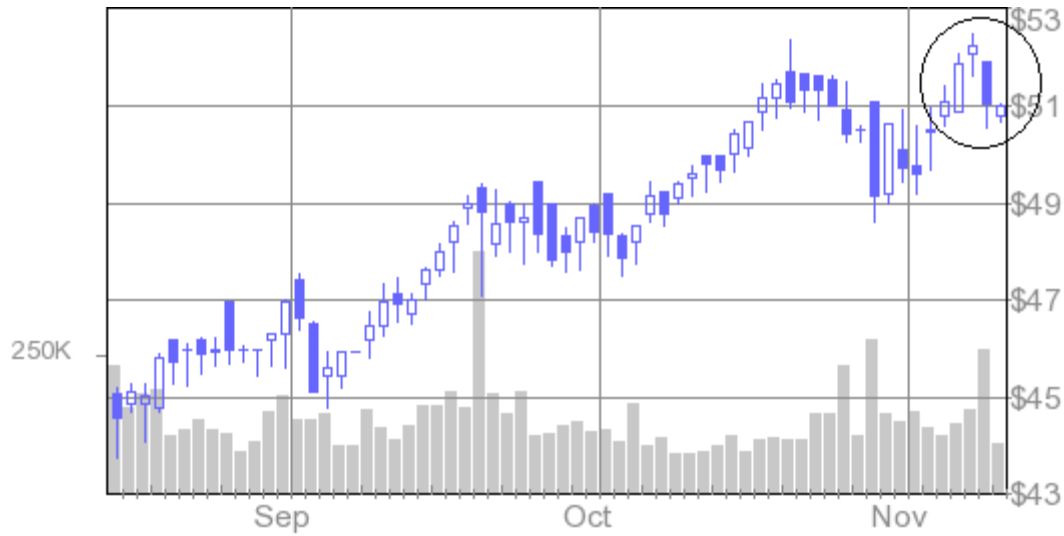
Here is a stock that fails the filter because it has three out of five days are down days.

Central Fund of Canada Limited (CEF) on 11/10/09

Last Day must have above average Volume
We want to make sure that people are still interested in this stock in that the volume is above average on the last day. A decrease in volume is not good.

Here is an example of low volume.

BlackRock Florida Municipal Income Trust (BBF) on 10/29/09

Steady Trading

We want to make sure the stock is trading steadily and consistently without any odd days or up or down activity. We check that each day's price movement is close to the 10 day moving average for that last 60 days.

Here is an example of a stock that passes the filter:

Cinemark Holdings Inc. (CNK) on 11/10/09

Here is a stock that fails the 'steady' filter:

Peabody Energy Corp. (BTU) on 11/10/09
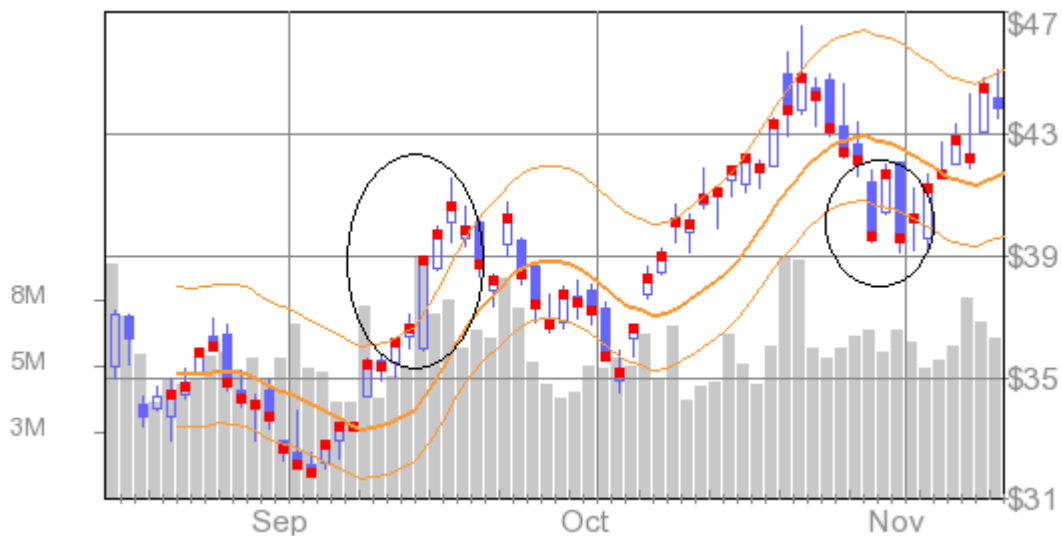
Stock Screen
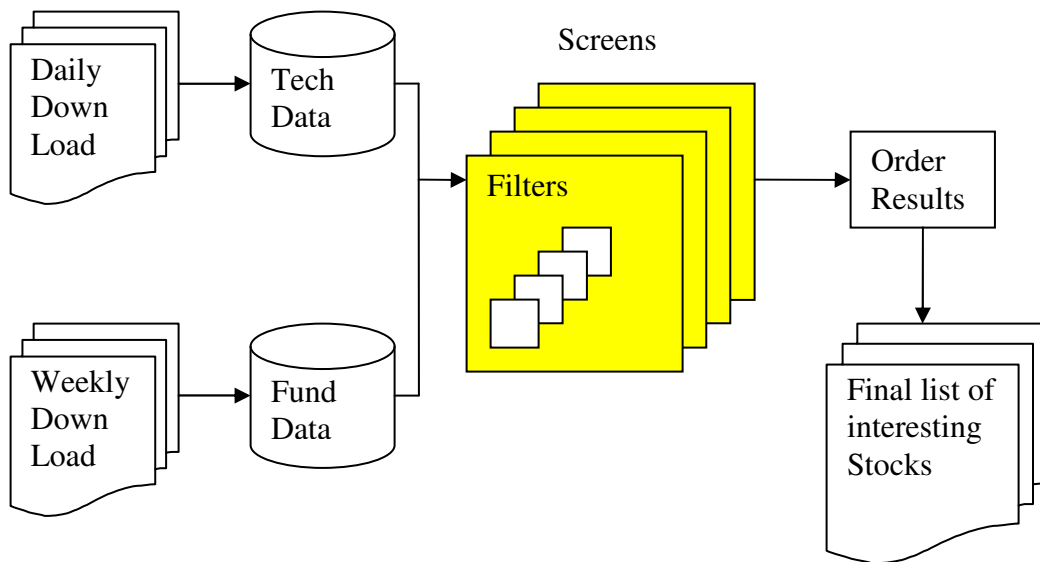
Stock Screens are individual buying philosophies. The whole set of stocks is run through a screen and based on the filters used in the screen, the stock is either considered a good buy or rejected.

These stock screens will be analyzed in detail later on.
- Growth
- New Highs

Growth Screen

The basic philosophy behind this screen is to find stocks that consistently increase in price over multiple fixed periods.

Morgan Stanley CAP TR IV (MWG) on 10/20/09
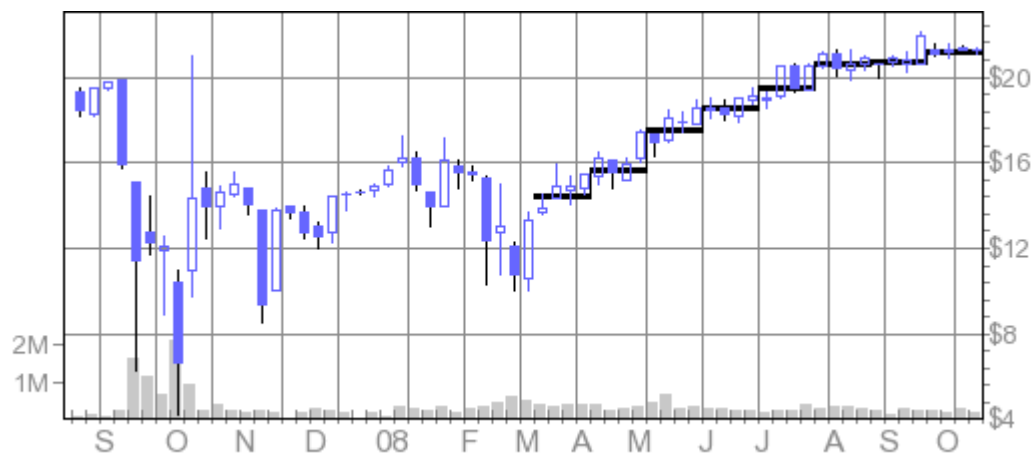
This is an example of running the screen for 8 periods of 20 days each, where 20 days is about the number of trading days in a month. So essentially , 8 months of grown. The hope is that if the stock has consistently increased in prices for this long, it will continue doing so.

A quick look at the rate of growth shows that the growth may be slowing down. This may show that the stock is reaching its peak for awhile. A better stock would be one that shows consistent growth with no evident slowdown.

Western Asset Worldwide Income Fund Inc (SBW) on 10/20/09

This is the same 8x20 screen with a better growth rate that does not look like it is slowing down. This consistent growth is the basic filter for this screen. There are other parts as well.

Generic Filters used in multiple screens:

Low Price	No stock less than $0.50 in the last 100 trading days.
Low Volume	Minimum of 10,000 average shares traded on 60 days.
Up Volume	Last 3 days of volume are above the last 60 days.
Up Day	The last trade day must be a Up day (Close > Open).

Special Filters used just for this screen.

10% Total Gain

To be sure that we have enough gain over the time period, we only pass stocks that have a gain of at least 10%.

Western Asset Worldwide Income Fund Inc (SBW) on 10/20/09

Steady Moving Up

To be sure we have a gradually increasing stock price, we check the 5 day moving average four times. Each one must be greater than the previous one and there must not be any really big jumps between checks.

Wisdom Tree Dreyfus Brazilian Real (BZF) on 10/21/09

There are two ways this filter can fail. One is if there is too much difference between the moving average in the four periods. We only allow a 5x1 ratio of single gains to average gains.

AC Moore Arts & Crafts (ACMR) on 10/21/09

And the second to fail this filters is not have a gain between the four periods:

Arctic Cat Inc. (ACAT) on 10/21/09
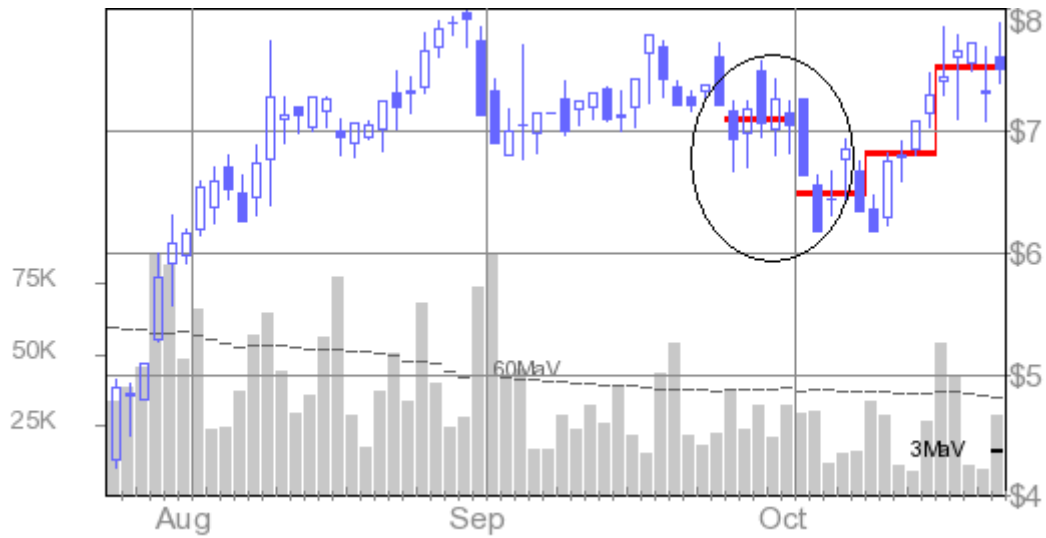
No Volatility Spikes

We want steady growth for this screen. So we check the that stock is not making any radical movements in any of the last 20 days. We check the gain or loss between the opening price and the closing price. A price drop is worst than a gain so we check for a 2% gain but only a 1% loss.

This one succeeds with nice small prices changes.

DWS Multi-Market Income Trust (KMM) on 10/22/09

This one fails because of the large price gains.

(ANTS) on 10/21/09
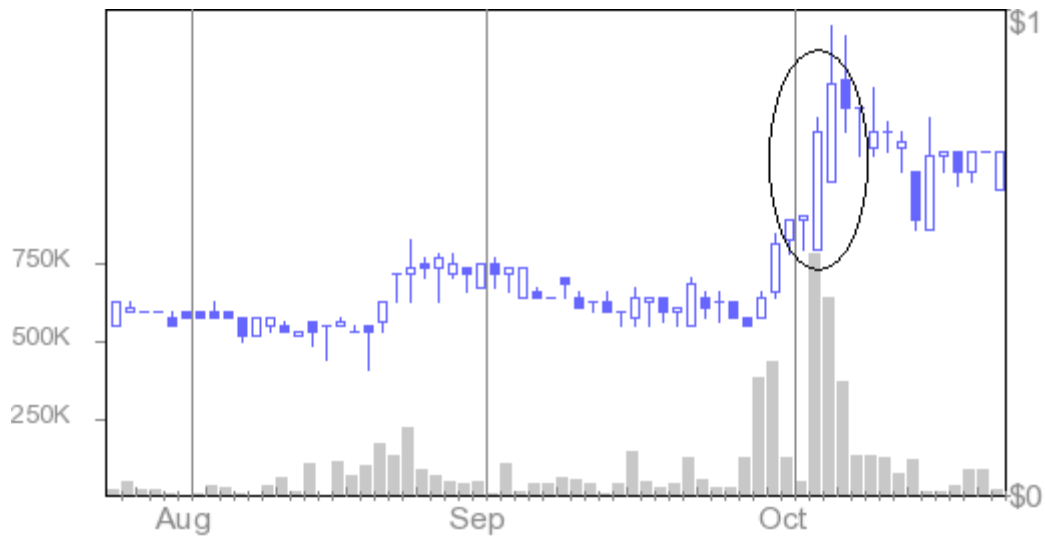
This one fails for large price drop.

Aero Century Corp. (ACY) on 10/22/09

No single period gain > 10 x Average Gain

We want steady growth for this screen. So we check that the gain between period is not greater than 10 x the average gain between periods. Then no one period's gains will dominate the average.

This stock passes the filter even though it has some period gains that a several times the average.

EnerSys (ENS) on 10/27/09

It is difficult to find a failure of this filter.

Last Period gains must be above average

We want the stock to be gaining in price, not leveling off or slowing it gain. We measure this by requiring the last several period's gains must be above the average gain of all the periods.

The last two periods have above average gains.

Banco Macro Bansud S.A. (BMA) on 10/28/09

Here the last two period gains a less than the average so this stock does not pass the filter.

AES Corp. (AES) on 10/28/09
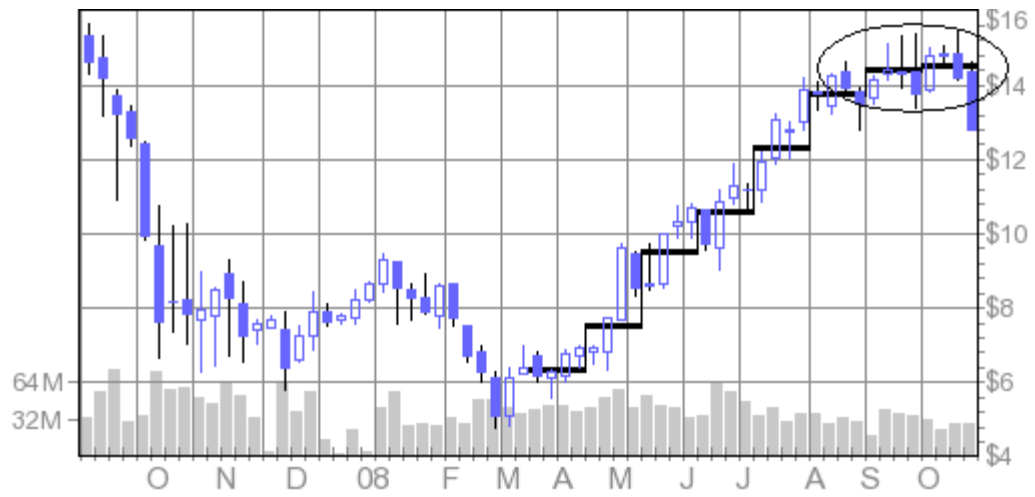
Performance

So how does this screen perform? The idea behind this screen was to find stocks that were increasing in price and hopefully would continue to increase. This is chart of several stocks that passed the screen. On the left of the Buy Date we can see that the stocks were falling in price for month 10 through month 7. then they started to gain in price up to the day the screen found them. (To get all the stocks on the same graph, even though they are different prices, their prices are all scaled to the same price on the buy day.) Then, as expected, they continued to rise some more after the buy date. That is what we were hoping for. Not all the stocks kept rising in price. Some did and several did not. But the average (the black line) did continue up.
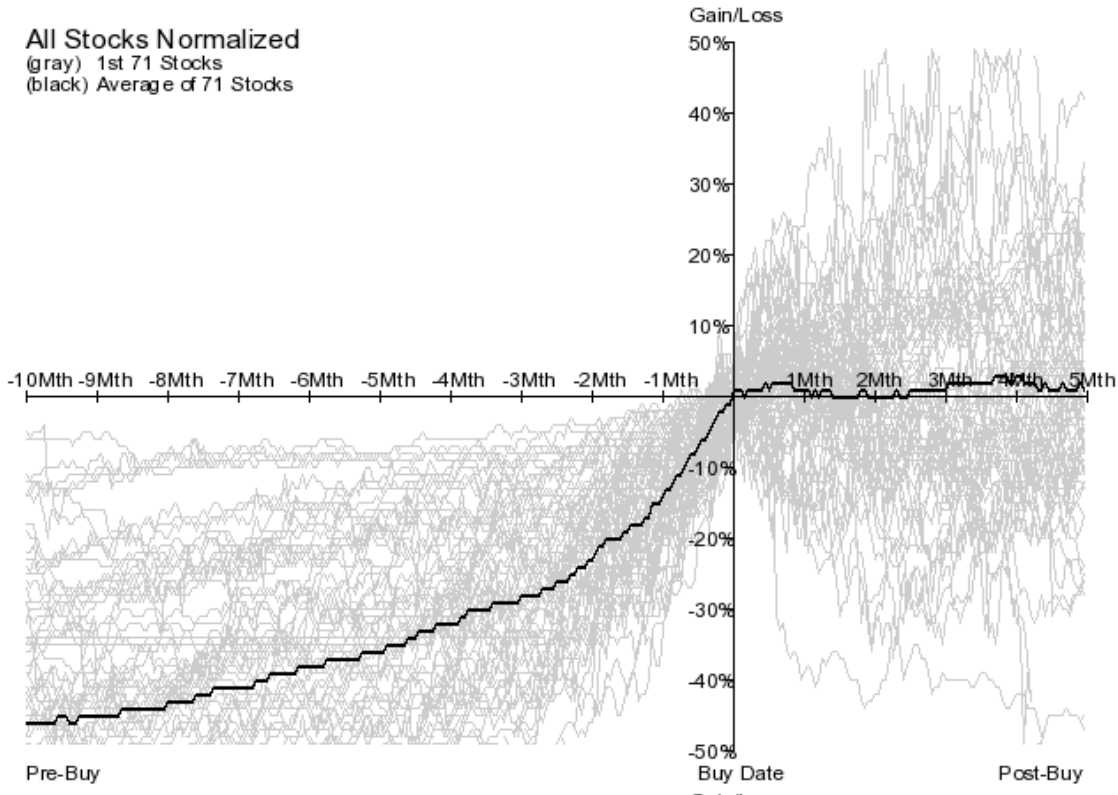
The abrupt leveling out in the prices after the buy date is a concern. Why did the stock, once we identified it, stop increasing in price? We don't know so it is something interesting to research.

This data was constructed by running this screen on all data short of the last 60 days. We needed the last 60 days to see what happened to the prices after the screen identified the stock.

Zoomed In

If we zoom in on the post buy data we can get a pretty good picture of what happens after the buy. We want to use this information to figure out how much profit we can expect from the average buy and how long it might take to get that profit. In this case the average stock continued to rise in price, but that will not always be true. It probably is here as this is a long term purchase decision. Some of the later screens will be short term purchases.

On this screen, we can only expect about 3% profit in about 10 days. After that the average profit drops.

Post-Buy distribution, 60 Days.
1/3 Pos Standard Deviation on Day +5 is 1.59%
1/3 Neg Standard Deviation on Day +5 is 2.16%
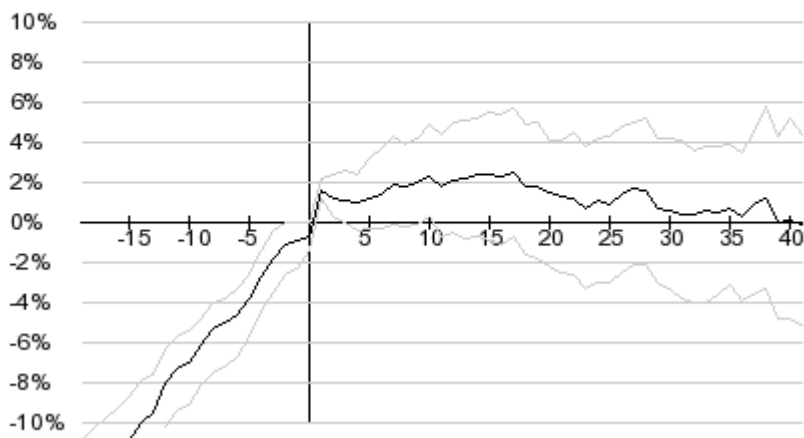
Details of a Profitable Trade

This is one of the profitable trades with the closing process normalized to the same value. The stock was bought on 1/10/06 for $30.25 and the Limited out up 6% at 32.06 on 1/31/06.
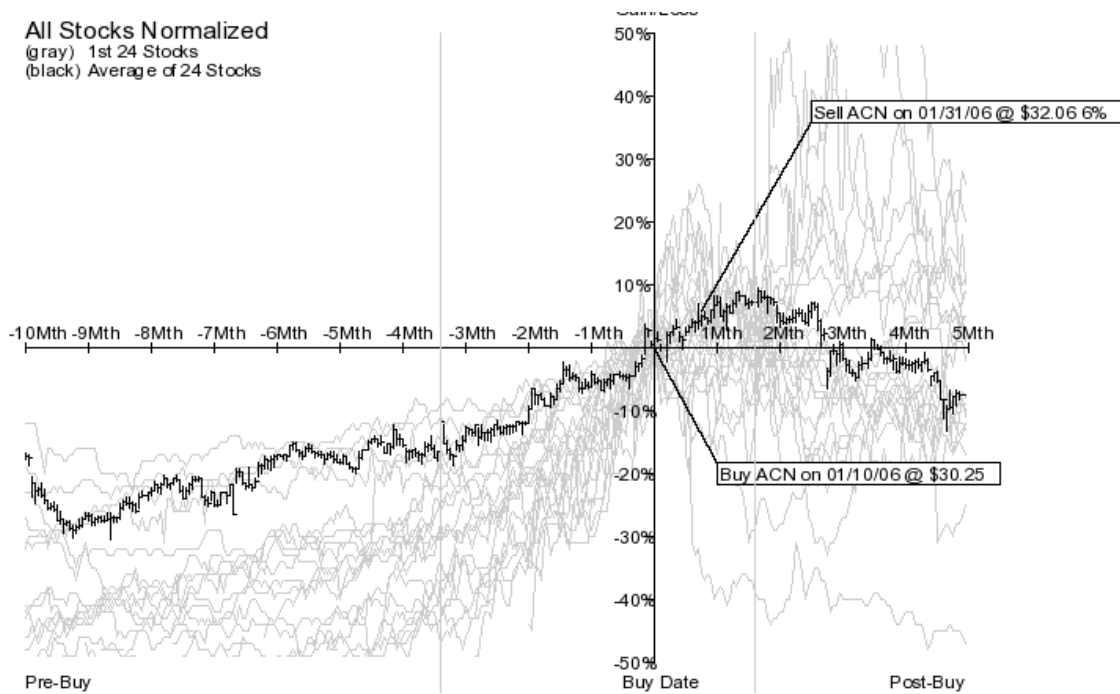
This is a blow up of the trade with the trailing stop loss and fixed stop limit highlighted.
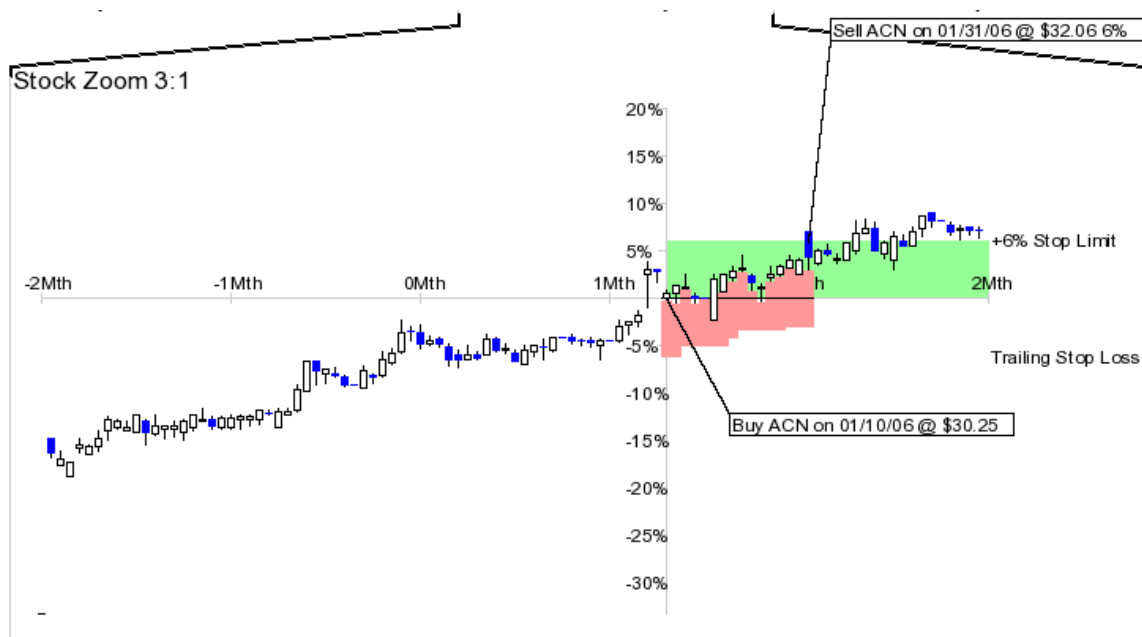
Details of a losing trade

This is one of the profitable trades with the closing process normalized to the same value. The stock was bought on 1/10/06 for $30.25 and the Limited out up 6% at 32.06 on 1/31/06.

All Stocks Normalized
(gray) 1st 24 Stocks
(black) Average of 24 Stocks

Gain/Loss

Sell ACN on 03/27/06 @ $30.31 -4%

Buy ACN on 02/10/06 @ $31.73

Pre-Buy   Buy Date   Post-Buy

TBD

Stock Zoom 3:1

Sell ACN on 03/27/06 @ $30.31 -4%

+6% Stop Limit

Trailing Stop Loss

Buy ACN on 02/10/06 @ $31.73
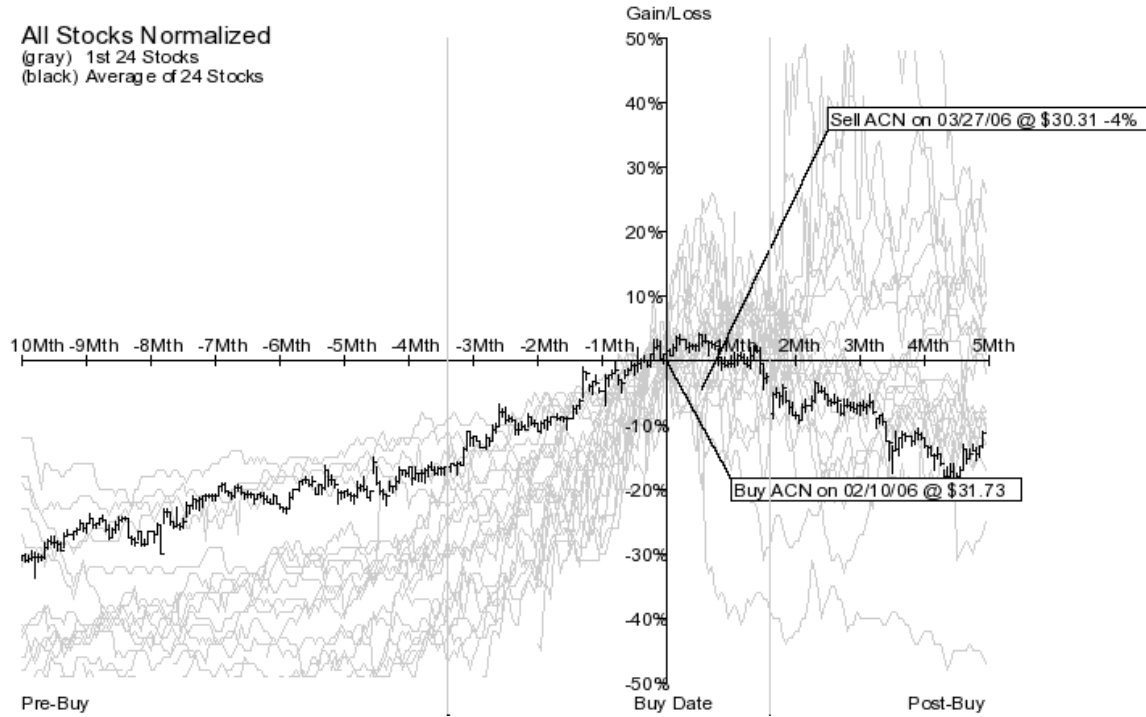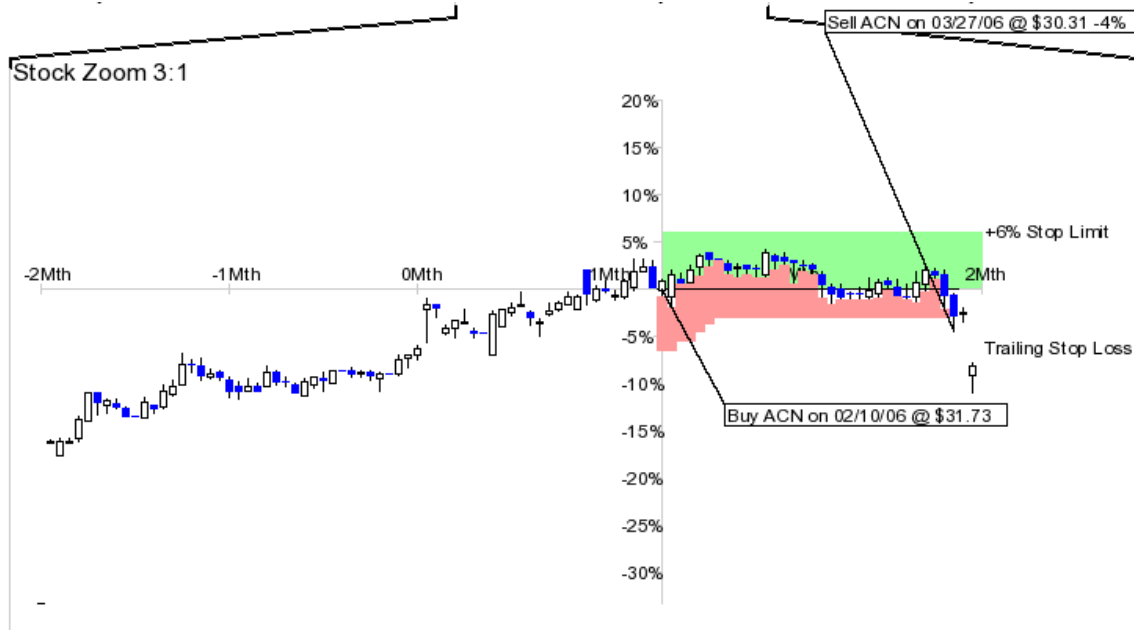
Expert System

I use a set of export systems to pick stocks. I have talked to and read many expert opinions and theories about stock picks and coded them into algorithms.

Breakout Algorithms

Breakout
Look for stocks that are breaking above a resistance line defined by multiple previous highs.

The specific filter is:

Daily Volume greater or equal to 25k shares.
Daily Close greater or equal to $0.75.
Skip 0.0% Gap Up for the last 4 days.
Breakout over the last 80 Days
Up Days In Half over the last 2 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

ALG - Alamo Group Inc.

Open	$75.93	Exchange	NYSE	Market Cap	745.04M	Limit @+6%	$79.86
Close	$75.34	Sector	B+A- Industrial Good	Trailing P/E	16.84	Close	$75.34
Day Range	$1.22	Industry	A+A- Farm & Constru	PEG	2.35	Loss @-6%	$70.82
52w Range	$28.17	1Y AnnRet	30.5%	Float	9.38M	Loss @-8%	$69.31
Volume	38,800	1Y AnnStd	22.9%	Short%Float		Loss @-3sd%	$66.73
Avg Vol(3m)	50,250	1Y Sharpe	1.3	Insiders	2.87%	AvgDD%	3.5%
		5Y AnnRet	21.7%	Institutions	91.40%	StdDD%	2.7%
		5Y AnnStd	29.6%	Fwd Div	0.56%	Shares/$1000	13
		5Y Sharpe	0.7				

12/12/2016 $75.34

Turtle Breakout / Donchian Breakout

Look for stocks that touch the upper Donchian line.

The specific filter is:

Daily Volume greater or equal to 100k shares.
Daily Close greater or equal to $0.25.
Skip 0.0% Gap Up for the last 16 days.
Turtle Breakout -25 - 1.0%
Up Days In Half over the last 14 days.
Volume Up Days In Halfs, 4 Days
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

LGND   - Ligand Pharmaceuticals Inc.

Open	$102.40	Exchange	NNM	Market Cap	2.62B	Limit @+6%	$109.85
Close	$103.63	Sector	B+C+Healthcare	Trailing P/E	10.36	Close	$103.63
Day Range	$3.43	Industry	C- B Drug Manufactu	PEG	0.83	Loss @-6%	$97.41
52w Range	$57.73	1Y AnnRet	-4.6%	Float	20.24M	Loss @-8%	$95.34
Volume	251,100	1Y AnnStd	36.1%	Short%Float		Loss @-3sd%	$99.16
Avg Vol(3m)	390,667	1Y Sharpe	-0.1	Insiders	0.62%	AvgDD%	2.2%
		5Y AnnRet	45.3%	Institutions	105.30%	StdDD%	0.7%
		5Y AnnStd	47.1%	Fwd Div		Shares/$1000	9
		5Y Sharpe	1.0				

11/09/2016 $104.77

Crossover Algorithms

Aroon

The algorithm filters stocks by looking for stocks that indicate up momentum via the Aroon indicator. (http://www.investopedia.com/terms/a/aroon.asp)

The Aroon indicator is a technical indicator used for identifying trends in an underlying security and the likelihood that the trends will reverse. It is made up of two lines: one line is called "Aroon up", which measures the strength of the uptrend, and the other line is called "Aroon down", which measures the downtrend. The indicator reports the time it is taking for the price to reach, from a starting point, the highest and lowest points over a given time period, each reported as a percentage of total time.

Notice how the trend is up when the Aroon up (green line) is above the Aroon down (red line). Conversely, a downtrend occurs when the Aroon down is above the Aroon up.

New Downtrend

Chart by MetaStock   Copyright © 2006 Investopedia.com

The Aroon indicator was developed by Tushar Chande in 1995. Both the Aroon up and the Aroon down fluctuate between zero and 100, with values close to 100 indicating a strong trend, and zero indicating a weak trend. The lower the Aroon up, the weaker the uptrend and the stronger the downtrend, and vice versa. The main assumption underlying this indicator is that a stock's price will close at record highs in an uptrend, and record lows in a downtrend.

The specific filter is:

Daily Volume greater or equal to 500k shares.
Daily Close greater or equal to $1.75.
Volume Ratio of last 3 days over previous 20 days >= 1.2
Aroon Indicator is Up over the last 30 Days
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days
Not a previous High in the last 60 days

ADM — Archer-Daniels-Midland Co.

Open	$46.42	Exchange	NYSE	Market Cap	25.55B	Limit @+6%	$47.89
Close	$45.18	Sector	C B Consumer Goods	Trailing P/E	16.68	Close	$45.18
Day Range	$1.52	Industry	B+A Food - Major D	PEG	4.47	Loss @-6%	$42.47
52w Range	$18.02	1Y AnnRet	1.0%	Float	573.39M	Loss @-8%	$41.57
Volume	3,959,800	1Y AnnStd	26.3%	Short%Float		Loss @-3sd%	$40.60
Avg Vol(3m)	2,632,169	1Y Sharpe	0.0	Insiders	2.23%	AvgDD%	4.5%
		5Y AnnRet	11.0%	Institutions	77.00%	StdDD%	1.9%
		5Y AnnStd	21.9%	Fwd Div	2.85%	Shares/$1000	22
		5Y Sharpe	0.5				

11/01 C:$46.75

Test Date
11/01/2016

E12:$42.82
E26:$42.68

VR
2.4

V:3867k

20MaV

Vma:2272k

2016 Jun   Jly   Aug   Sep   Oct   Nov

Test Date
11/01/2016

Aroon Indicator (35 days)

Crossover

2016 Jun   Jly   Aug   Sep   Oct   Nov

MACD Cross

Look for stocks that have a crossover of two moving averages.

The specific filter is:

Daily Volume greater or equal to 600k shares.
Daily Close greater or equal to $0:05.
Skip 0.0% Gap Up for the last 8 days.
MACD Signal Cross -2 - 18 Days >= 0%
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

AXS — Axis Capital Holdings Ltd.

Open	$62.20	Exchange	NYSE	Market Cap	5.02B	Limit @+6%	$66.73
Close	$62.95	Sector	B- B- Financial	Trailing P/E	10.92	Close	$62.95
Day Range	$1.12	Industry	B- A- Property & Cas	PEG	-5.45	Loss @-6%	$59.17
52w Range	$11.95	1Y AnnRet	3.8%	Float	90.99M	Loss @-8%	$57.91
Volume	530,500	1Y AnnStd	10.2%	Short%Float		Loss @-3sd%	$58.43
Avg Vol(3m)	457,463	1Y Sharpe	0.4	Insiders	1.98%	AvgDD%	2.1%
		5Y AnnRet	14.6%	Institutions	89.20%	StdDD%	1.7%
		5Y AnnStd	13.5%	Fwd Div	2.60%	Shares/$1000	15
		5Y Sharpe	1.1				

12/06/2016 $62.95
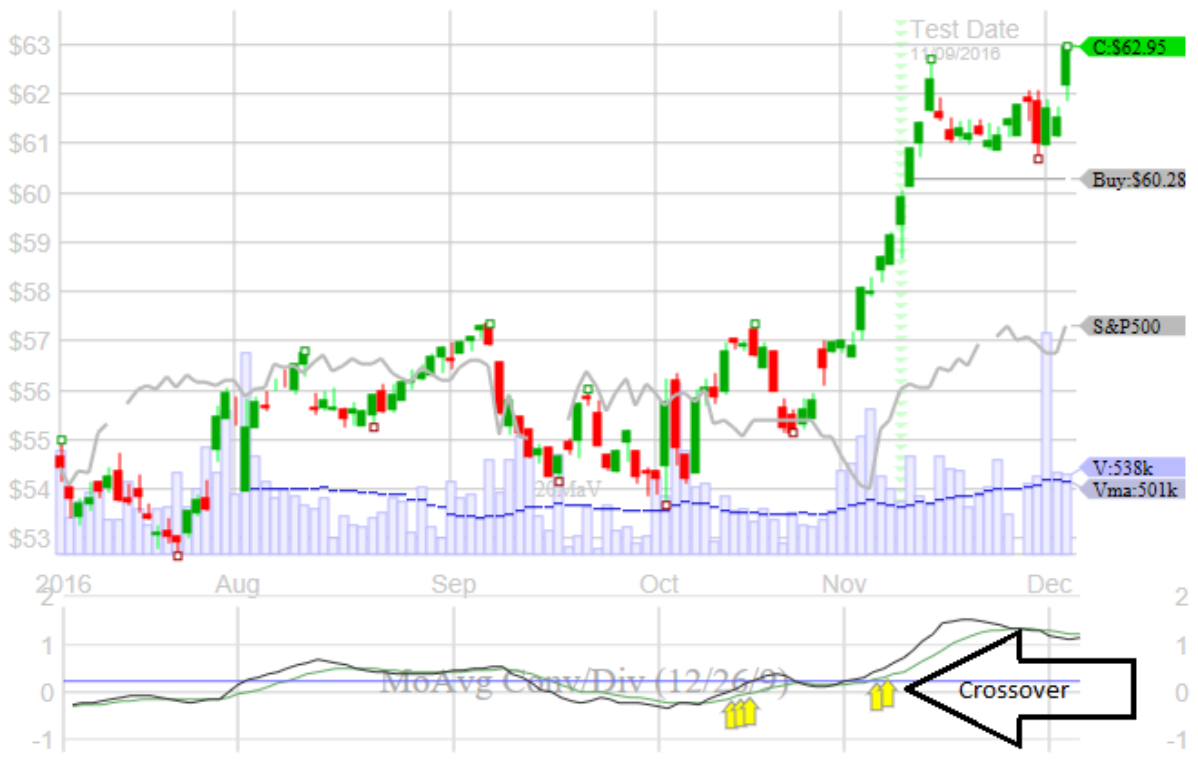
RSI Crossover

The Relative Strength Indicator crossing from 55 to 65.

The specific filter is:

Daily Volume greater or equal to 50k shares.
Daily Close greater or equal to $3.75.
Skip 0.0% Gap Up for the last 4 days.
RSI Signal Cross -55% - 64%
New High in the last 180 days
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

RNR   - RenaissanceRe Holdings Ltd.

Open	$132.08	Exchange	NYSE	Market Cap	5.00B	Limit @+6%	$140.55
Close	$132.59	Sector	A- B+Financial	Trailing P/E	14.07	Close	$132.59
Day Range	$1.42	Industry	C B+Property & Cas	PEG	3.18	Loss @-6%	$124.63
52w Range	$25.71	1Y AnnRet	16.1%	Float	42.05M	Loss @-8%	$121.98
Volume	174,400	1Y AnnStd	10.5%	Short%Float		Loss @-3sd%	$126.28
Avg Vol(3m)	260,813	1Y Sharpe	1.5	Insiders	1.85%	AvgDD%	2.0%
		5Y AnnRet	13.3%	Institutions	96.10%	StdDD%	0.9%
		5Y AnnStd	12.7%	Fwd Div	1.09%	Shares/$1000	7
		5Y Sharpe	1.0				

Event Algorithms

New High

Stocks making new highs over the last 160 days and not within 10% of a previous high, in case people want to sell when they back to even. The idea here is a stock making new highs will probably continue to go up. There is some basis for the new high, new product, new way of doing business, new customer base, etc. We do nto need to know the reason. We only need to profit on the upswing of the stock.

The specific filter is:

Daily Volume >= Minimum:400k
Daily Close >= Minimum:$3.50
Volume Ratio of last 3 days over previous 20 days >= 1.0
Price gain of Current Day / Day-5 >= 103%
New High in the last 160 days
Not a previous High in the last 140 days
5 Sets of 160 Day Moving Averages up by 1.0%
Skip 0.0% Gap Up for the last 18 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

Exponential Close

Stocks closing exponentially closing up for 5 sets of 4 day MA.

The specific filter is:

Look for stocks that are closing up exponentially.
Daily Volume greater or equal to 500k shares.
Daily Close greater or equal to $3.50.
Volume Ratio of last 3 days over previous 20 days >= 1.1
Expotential average Close over 5 sets of 2 days of 1.0%
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

PRU   - Prudential Financial Inc.

Open	$102.28	Exchange	NYSE	Market Cap	31.38B	Limit @+6%	$107.83
Close	$101.73	Sector	A-B+Financial	Trailing P/E	6.62	Close	$101.73
Day Range	$1.70	Industry	C+B Life Insurance	PEG	1.20	Loss @-6%	$95.63
52w Range	$46.31	1Y AnnRet	17.1%	Float	440.98M	Loss @-8%	$93.59
Volume	1,954,500	1Y AnnStd	30.5%	Short%Float		Loss @-3sd%	$95.39
Avg Vol(3m)	2,855,060	1Y Sharpe	0.6	Insiders	0.18%	AvgDD%	2.8%
		5Y AnnRet	10.3%	Institutions	65.80%	StdDD%	1.2%
		5Y AnnStd	26.9%	Fwd Div	4.06%	Shares/$1000	9
		5Y Sharpe	0.4				

Momentum Algorithms

Growth

The algorithm filters stocks by looking for stocks with steady growth as defined by ever increasing moving average values. The idea here is that a stock that demonstrates continued increase in price probably will continue to do so in the future.

The specific filter is:

Daily Volume greater or equal to 100k shares.
Daily Close greater or equal to $0.25.
Skip 0.0% Gap Up for the last 4 days.
Breakout over the last 80 Days
Up Days In Half over the last 2 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

Growth using Exponential Moving Averages

The multiple moving averages must be exponentially increasing with each one.

The specific filter is:

Daily Volume greater or equal to 500k shares.
Daily Close greater or equal to $4.25.
Volume Ratio of last 3 days over previous 20 days >= 1.0
Price gain of Current Day / Day-5 >= 101%
3 Sets of 80 Day Moving Averages up by -1.0% each set.
Skip 0.0% Gap Up for the last 28 days.
Up Days In Half over the last 6 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

FFBC   - First Financial Bancorp.

Open	$28.20	Exchange	NNM	Market Cap	1.19B	Limit @+6%	$30.74		
Close	$29.00	Sector	A- A Financial	Trailing P/E	15.47	Close	$29.00		
Day Range	$1.28	Industry	A+A- Regional - Midv	PEG	10.53	Loss @-6%	$27.26		
52w Range	$15.44	1Y AnnRet	34.1%	Float	60.55M	Loss @-8%	$26.68		
Volume	279,100	1Y AnnStd	34.8%	Short%Float		Loss @-3sd%	$26.26		
Avg Vol(3m)	228,523	1Y Sharpe	1.0	Insiders	2.00%	AvgDD%	3.6%		
		5Y AnnRet	6.4%	Institutions	75.50%	StdDD%	1.9%		
		5Y AnnStd	22.3%	Fwd Div	3.39%	Shares/$1000	34		
		5Y Sharpe	0.3						

Up

The algorithm filters stocks by looking for stocks that are moving up as defined by increasing moving averages (black) and the current short term moving average is above th4e long term moving average (blue).

The specific filter is:

Daily Volume greater or equal to 100k shares.
Daily Close greater or equal to $3.25.
Volume Ratio of last 3 days over previous 20 days >= 1.1
Price gain of Current Day / Day-5 >= 100%
5 Sets of 20 Day Moving Averages up by 1.0%.
7 Day MovAvg > 140 Day MovAvg
Skip any (Day1(High-Low) / Day2(High-Low)) > 2.2
Skip 0.0% Gap Up for the last 4 days.
Volatility less than 19.00% over the last 50 days
Close to Close Up Days in Halfs, 4 Days
Volume Up Days In Halfs, 4 Days
Up Days In Half over the last 4 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

LFUS   - Littelfuse Inc.

Open	$146.36	Exchange	NNM	Market Cap	2.62B	Limit @+6%	$154.77
Close	$146.01	Sector	C+B+Industrial Good	Trailing P/E	32.51	Close	$146.01
Day Range	$2.52	Industry	C+A- Industrial Electr	PEG	1.34	Loss @-6%	$137.25
52w Range	$64.39	1Y AnnRet	33.6%	Float	22.10M	Loss @-8%	$134.33
Volume	144,900	1Y AnnStd	18.9%	Short%Float		Loss @-3sd%	$130.35
Avg Vol(3m)	200,693	1Y Sharpe	1.8	Insiders	1.31%	AvgDD%	4.6%
		5Y AnnRet	24.7%	Institutions	99.80%	StdDD%	2.0%
		5Y AnnStd	23.3%	Fwd Div	1.02%	Shares/$1000	6
		5Y Sharpe	1.1				

Up2

Look for stocks that are moving up faster than the Up screen.

The specific filter is:

Daily Volume greater or equal to 450k shares.
Daily Close greater or equal to $5.00.
Price gain of Current Day / Day-5 >= 101%
5 Volume Sets of 15 days increase by 1.0
Volatility less than 1.00% over the last 30 days
Up Days In Half over the last 2 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

FCF — First Commonwealth Financial Corp.

Open	$13.05	Exchange	NYSE	Market Cap	810.10M	Limit @+6%	$14.13
Close	$13.33	Sector	A- A Financial	Trailing P/E	16.91	Close	$13.33
Day Range	$0.41	Industry	B B+Regional - Nort	PEG	2.54	Loss @-6%	$12.53
52w Range	$5.50	1Y AnnRet	29.7%	Float	87.42M	Loss @-8%	$12.26
Volume	272,800	1Y AnnStd	29.9%	Short%Float		Loss @-3sd%	$12.44
Avg Vol(3m)	289,634	1Y Sharpe	1.0	Insiders	1.98%	AvgDD%	2.5%
		5Y AnnRet	22.6%	Institutions	61.80%	StdDD%	1.4%
		5Y AnnStd	24.8%	Fwd Div	3.13%	Shares/$1000	75
		5Y Sharpe	0.9				

12/06/2016 $13.33

Long Term Algorithms

Alpha

The algorithm filters stocks by looking for high Alpha stocks. These are stocks that consistently beat the S&P500 on a weekly basis.

The specific filter is:

Daily Volume greater or equal to 50k shares.
Daily Close greater or equal to $0:25.
Skip 0.0% Gap Up for the last 24 days.
Alpha of 7.0% over 16 Weeks
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

RBA — Ritchie Bros. Auctioneers Inc.

				NYSE					
Open	$37.75	Exchange		NYSE	Market Cap	3.71B	Limit @+6%	$40.22
Close	$37.94	Sector	A A Services		Trailing P/E	26.44	Close	$37.94
Day Range	$0.68	Industry	C+A Business Servic		PEG	2.62	Loss @-6%	$35.66
52w Range	$17.85	1Y AnnRet	46.6%		Float	105.65M	Loss @-8%	$34.90
Volume	584,100	1Y AnnStd	26.1%		Short%Float		Loss @-3sd%	$33.37
Avg Vol(3m)	468,873	1Y Sharpe	1.8		Insiders	2.94%	AvgDD%	4.9%
		5Y AnnRet	13.6%		Institutions	101.70%	StdDD%	2.4%
		5Y AnnStd	24.4%		Fwd Div	2.00%	Shares/$1000	26
		5Y Sharpe	0.6					

12/06/2016 $37.94

Sharpe Ratio

The algorithm filters stocks by looking for high Sharpe Ratio stocks. Sharpe Ratio = Returns / Volatility.

The specific filter is:

Daily Volume greater or equal to 25k shares.
Daily Close greater or equal to $0.25.
Volume Ratio of last 3 days over previous 20 days >= 1.2
Price gain of Current Day / Day-5 >= 100%
Weekly Annual Sharpe Ratio greater than 1.0 over 5 Years
Weekly Annual Return greater than 20.0% over 5 Years
Skip 0.0% Gap Up for the last 4 days.
Up Days In Half over the last 2 days.
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days

OLBK - Old Line Bancshares Inc.

Open	$25.99	Exchange	NNM	Market Cap	199.63M	Limit @+6%	$27.43
Close	$25.88	Sector	A A- Financial	Trailing P/E	20.11	Close	$25.88
Day Range	$0.30	Industry	A- B- Regional - Mid-	PEG	0	Loss @-6%	$24.33
52w Range	$9.24	1Y AnnRet	11.0%	Float	6.27M	Loss @-8%	$23.81
Volume	26,600	1Y AnnStd	11.9%	Short%Float		Loss @-3sd%	$22.28
Avg Vol(3m)	21,754	1Y Sharpe	0.9	Insiders	22.88%	AvgDD%	4.8%
		5Y AnnRet	23.2%	Institutions	43.00%	StdDD%	3.0%
		5Y AnnStd	18.6%	Fwd Div	1.31%	Shares/$1000	38
		5Y Sharpe	1.2				

12/09/2016 $25.88
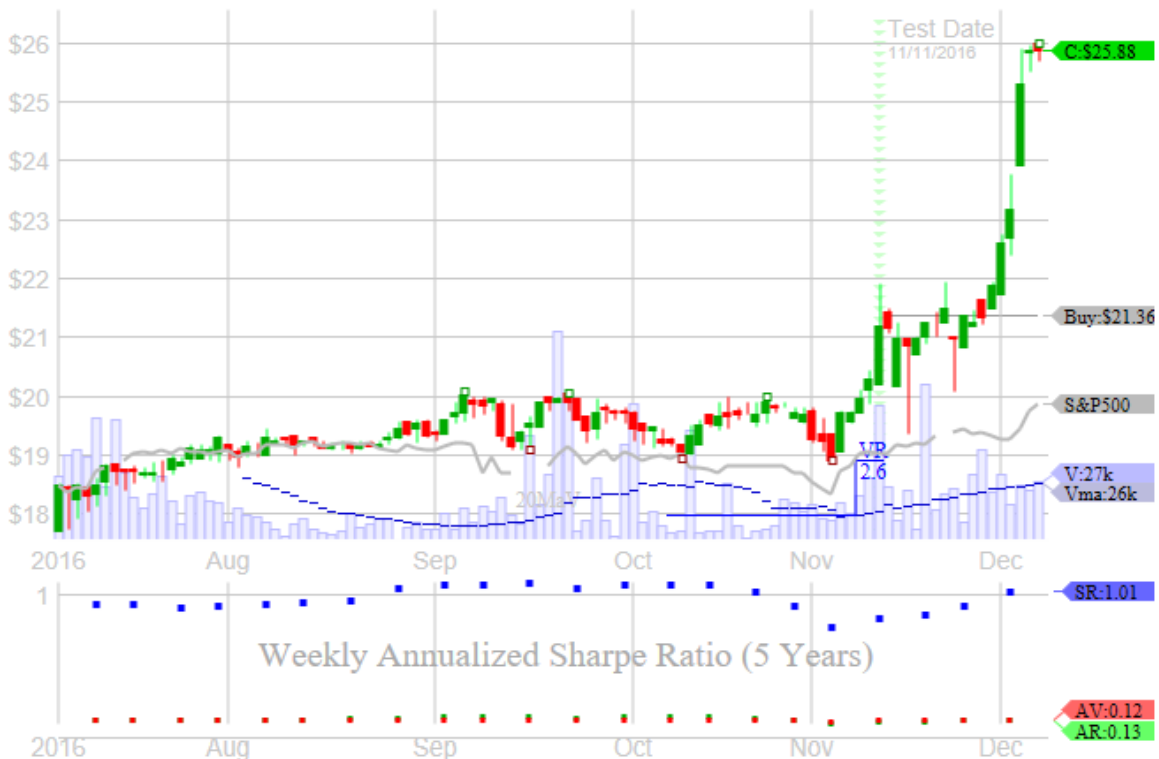
The Buy and Hold Algorithms

Annual Return
Look for stocks with very high annualized returns.

Specific Filter:

Scan for stocks that have long term annual return.
Daily Volume greater or equal to 500k shares.
Daily Close greater or equal to $3.75.
Weekly Annual Return greater than 10.0% over 5 Years
Weekly Annual Sharpe Ratio greater than 1.3 over 5 Years
No missing reported days in the last 7 days.
Close to Close within 0.3% over the last 120 days
Check for missing splits last 1560 Days

EFX   - Equifax Inc.

Open	$118.04	Exchange	NYSE	Market Cap	15.74B	Limit @+6%	$124.19
Close	$117.16	Sector	B+A- Services	Trailing P/E	36.02	Close	$117.16
Day Range	$1.21	Industry	B- B+Business Servic	PEG	2.17	Loss @-6%	$110.13
52w Range	$45.25	1Y AnnRet	14.8%	Float	118.32M	Loss @-8%	$107.79
Volume	618,300	1Y AnnStd	14.4%	Short%Float		Loss @-3sd%	$112.69
Avg Vol(3m)	802,805	1Y Sharpe	1.0	Insiders	0.81%	AvgDD%	2.8%
		5Y AnnRet	24.7%	Institutions	89.00%	StdDD%	0.4%
		5Y AnnStd	16.5%	Fwd Div	1.01%	Shares/$1000	8
		5Y Sharpe	1.4				

Dividend Aristocrats

A stock must meet the following criteria to be a Dividend Aristocrat:

- Be in the S&P 500
- Have 25+ consecutive years of dividend increases
- Meet certain minimum size & liquidity requirements

Consumer Staples

- Archer-Daniels-Midland (ADM)
- Brown-Forman (BF-B)
- Colgate-Palmolive (CL)
- Clorox (CLX)
- Coca-Cola (KO)
- Hormel Foods (HRL)
- Kimberly-Clark (KMB)
- McCormick & Company (MKC)
- PepsiCo (PEP)
- Procter & Gamble (PG)
- Sysco Corporation (SYY)
- Wal-Mart (WMT)
- Walgreens Boots Alliance (WBA)

Industrials

- Cintas (CTAS)
- Dover (DOV)
- Emerson Electric (EMR)
- Illinois Tool Works (ITW)
- 3M (MMM)
- Pentair (PNR)
- Stanley Black & Decker (SWK)
- W.W. Grainger (GWW)

Health Care

- Abbott Laboratories (ABT)
- AbbVie (ABBV)
- Becton, Dickinson & Company (BDX)
- C.R. Bard (BCR)
- Cardinal Health (CAH)
- Johnson & Johnson (JNJ)
- Medtronic (MDT)

Consumer Discretionary

- Genuine Parts Company (GPC)
- Leggett & Platt (LEG)
- Lowe's (LOW)
- McDonald's (MCD)
- Target (TGT)
- V.F. Corporation (VFC)

Financials

- Aflac (AFL)
- Cincinnati Financial (CINF)
- Franklin Resources (BEN)
- S&P Global (SPGI)
- T. Rowe Price Group (TROW)

Materials

- Air Products and Chemicals (APD)
- Ecolab (ECL)
- PPG Industries (PPG)
- Sherwin-Williams (SHW)
- Nucor (NUE)

Energy

- Chevron (CVX)
- Exxon Mobil (XOM)

Information Technology

- Automatic Data Processing (ADP)

Real Estate

- HCP, Inc. (HCP)

Telecommunication Services

- AT&T (T)

Utilities

- Consolidated Edison (ED)

T   - AT&T Inc.

Open	$40.25	Exchange		NYSE	Market Cap	262.33B	Limit @+6%	$42.83
Close	$40.41	Sector	A+B	Technology	Trailing P/E	18.06	Close	$40.41
Day Range	$0.56	Industry	A- B-	Telecom Servic	PEG	1.82	Loss @-6%	$37.99
52w Range	$10.80	1Y AnnRet		15.1%	Float	6150.00M	Loss @-8%	$37.18
Volume	21,999,100	1Y AnnStd		19.1%	Short%Float		Loss @-3sd%	$38.29
Avg Vol(3m)	25,441,678	1Y Sharpe		0.8	Insiders	0.05%	AvgDD%	1.8%
		5Y AnnRet		6.2%	Institutions	63.20%	StdDD%	1.1%
		5Y AnnStd		14.8%	Fwd Div	4.45%	Shares/$1000	24
		5Y Sharpe		0.4				

Position Sizing / Confidence

Position sizing is the idea of not allocating all your money to a single stock pick. I usually allocate only 10% of my capital to a single pick. However, I have more confidence in some picks than I do others and in these picks I would allocate 2x the normal 10%.

'Confidence' is calculated using multiple measurements that results in a correlation between the confidence value and the tested profit. For the New High filter, confidence is a mix of annualized return, Sharpe Ratio, price rise rate, weighted up days and volatility.

Selling

Emotion feeds into selling more than any other place. Everyone hates to sell a losing trade. If we just hang on a little longer it will surly go back up and we will make some money. I use stop losses and stop limits to automatically sell the stock at predetermined values.

Below is a chart of where to set the loss and trailing stop limit testing all values between 70% - 100%.
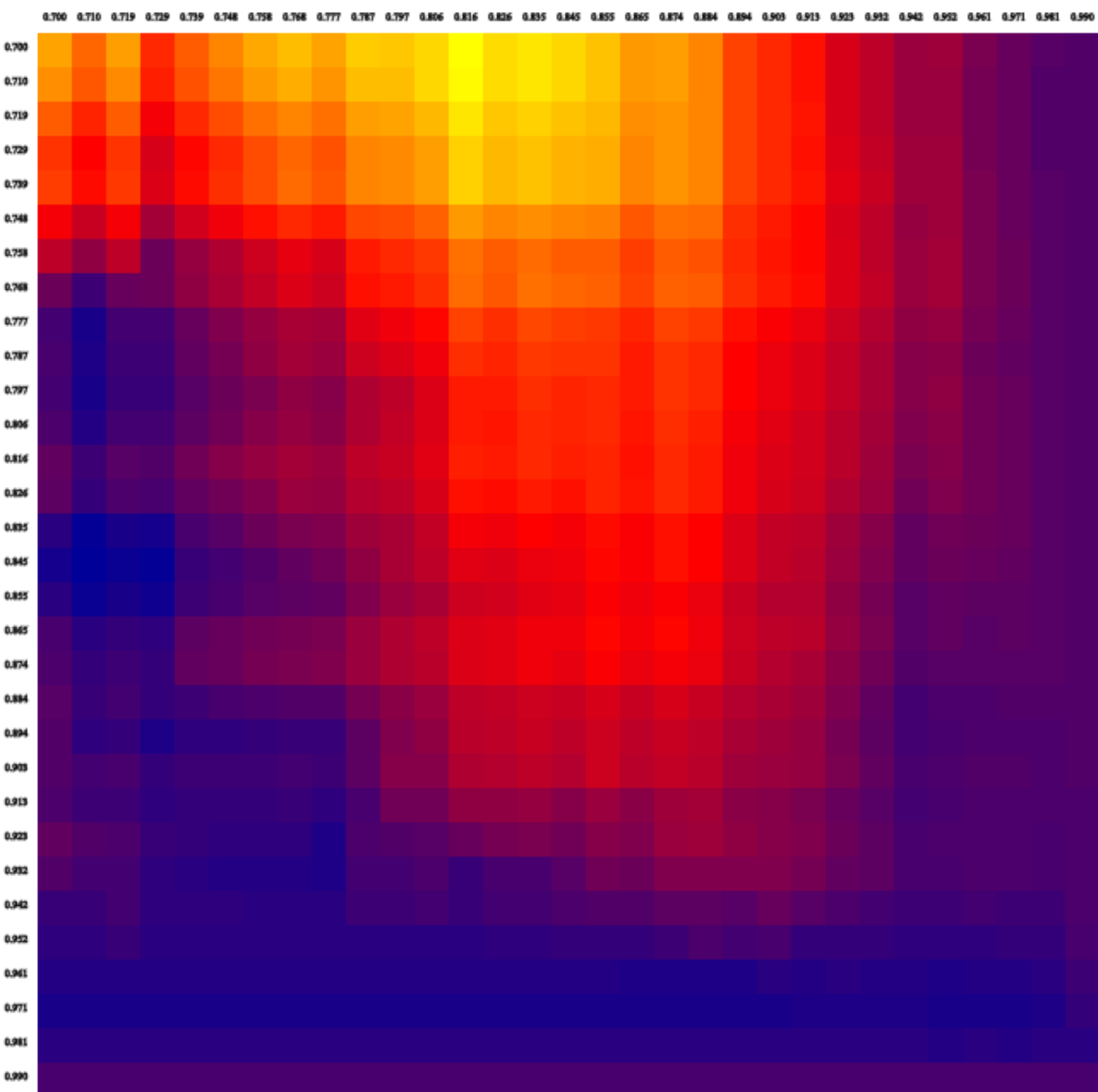
If losing 30% on a trade is too much, below is a chart of where to set the loss and limits testing all values between 80% - 100%.
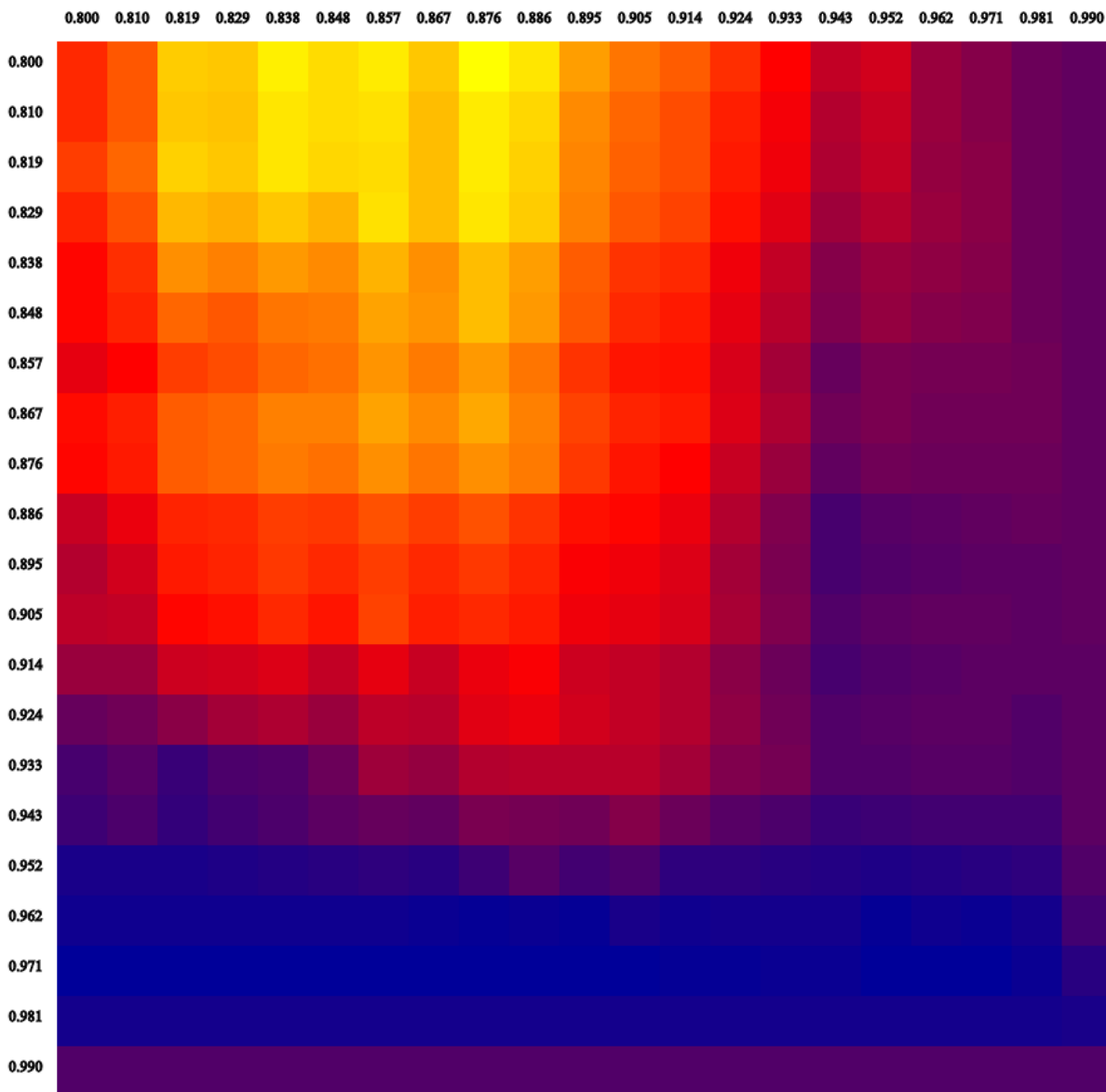
If losing 20% on a trade is too much, below is a chart of where to set the loss and limits testing all values between 90% - 100%.
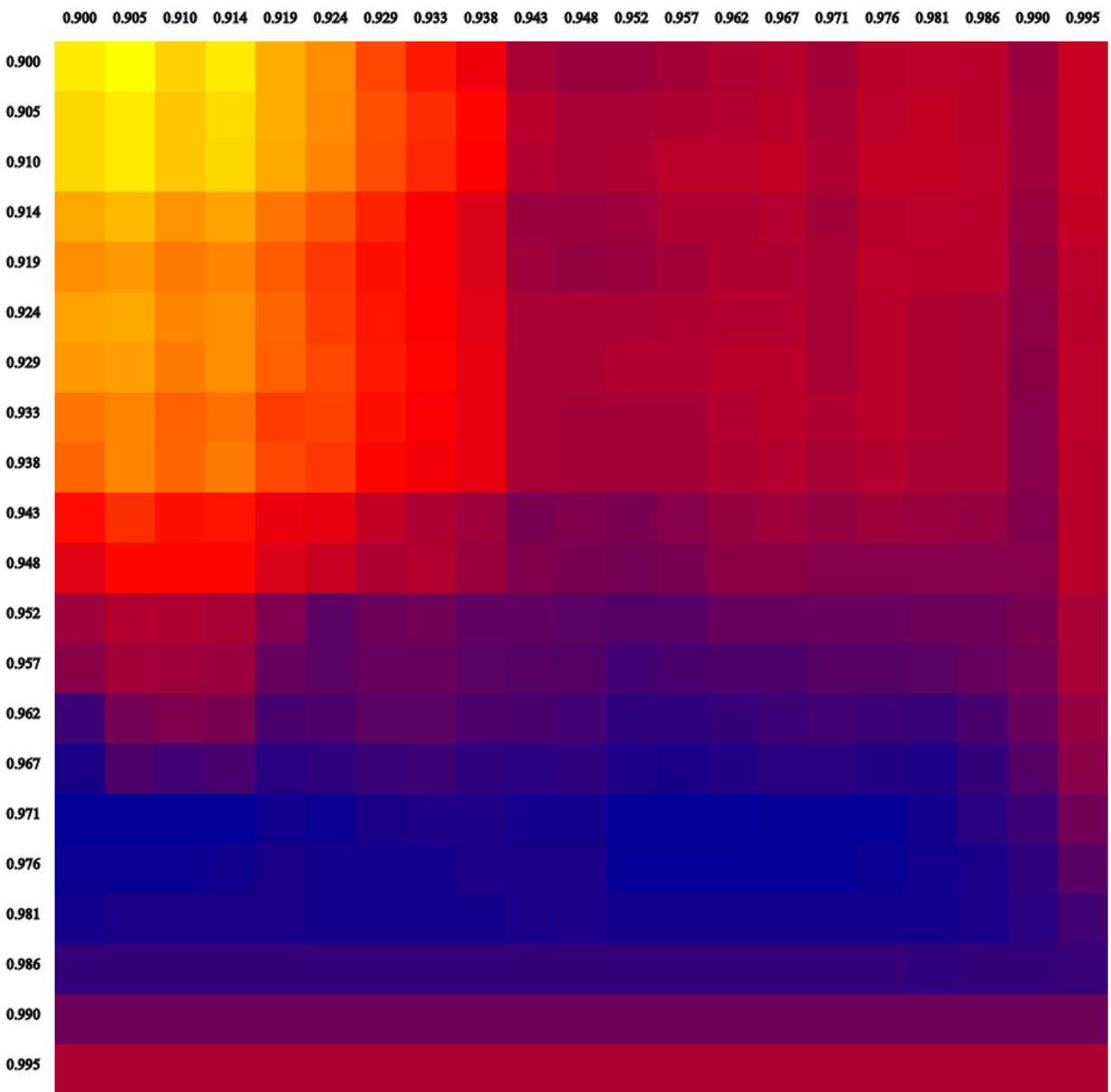
These were actually surprising sets of data to me. I expected to find a sweet spot somewhere in the middle and not at the maximum loss points. Perhaps more research is needed.

Genetic Algorithms

The problem with any expert system is tuning the parameters that are given by the expert. We hear 'industry standard' and ' always done that way'. But how to we know and can we do a better job with some testing. This is where genetic algorithms come into play. They are very good at testing a very large space. Some of the algorithm can have up to 1,500,000,000 combinations of parameters. It would take a year of computer time on a quad core machine to cover this space (or 10,000 machines an hour with the associated cost). A genetic algorithm can do the same on a single machine in a hour.

In a genetic algorithm, a population of candidate solution (called individuals) to an optimization problem is evolved toward better solutions. Each candidate solution has a set of properties (its chromosomes or genotype) which can be mutated and altered; traditionally, solutions are represented in binary as strings of 0s and 1s, but other encodings are also possible. (I use a list of integers.)

The evolution usually starts from a population of randomly generated individuals, and is an iterative process, with the population in each iteration called a *generation*. In each generation, the fitness of every individual in the population is evaluated; the fitness is usually the value of the objective function in the optimization problem being solved. The more fit individuals are stochastically selected from the current population, and each individual's genome is modified (recombined and possibly randomly mutated) to form a new generation. The new generation of candidate solutions is then used in the next iteration of the algorithm. Commonly, the algorithm terminates when either a maximum number of generations has been produced, or a satisfactory fitness level has been reached for the population.

A typical genetic algorithm requires:

1. a genetic representation of the solution domain,
2. a fitness function to evaluate the solution domain.

A standard representation of each candidate solution is as an array of bits.[2] Arrays of other types and structures can be used in essentially the same way. The main property that makes these genetic representations convenient is that their parts are easily aligned due to their fixed size, which facilitates simple crossover operations. Variable length representations may also be used, but crossover implementation is more complex in this case. Tree-like representations are explored in genetic programming and graph-form representations are explored in evolutionary programming; a mix of both linear chromosomes and trees is explored in gene expression programming.

Once the genetic representation and the fitness function are defined, a GA proceeds to initialize a population of solutions and then to improve it through repetitive application of the mutation, crossover, inversion and selection operators.

Initialization

The population size depends on the nature of the problem, but typically contains several hundreds or thousands of possible solutions. Often, the initial population is generated randomly, allowing the entire range of possible solutions (the *search space*). Occasionally, the solutions may be "seeded" in areas where optimal solutions are likely to be found.

Selection

During each successive generation, a portion of the existing population is selected to breed a new generation. Individual solutions are selected through a *fitness-based* process, where fitter solutions (as measured by a fitness function) are typically more likely to be selected. Certain selection methods rate the fitness of each solution and preferentially select the best solutions. Other methods rate only a random sample of the population, as the former process may be very time-consuming.

The fitness function is defined over the genetic representation and measures the *quality* of the represented solution. The fitness function is always problem dependent. For instance, in the knapsack problem one wants to maximize the total value of objects that can be put in a knapsack of some fixed capacity. A representation of a solution might be an array of bits, where each bit represents a different object, and the value of the bit (0 or 1) represents whether or not the object is in the knapsack. Not every such representation is valid, as the size of objects may exceed the capacity of the knapsack. The *fitness* of the solution is the sum of values of all objects in the knapsack if the representation is valid, or 0 otherwise.

In some problems, it is hard or even impossible to define the fitness expression; in these cases, a simulation may be used to determine the fitness function value of a phenotype (e.g. computational fluid dynamics is used to determine the air resistance of a vehicle whose shape is encoded as the phenotype), or even interactive genetic algorithms are used.

Genetic operators

The next step is to generate a second generation population of solutions from those selected through a combination of genetic operators: crossover (also called recombination), and mutation.

For each new solution to be produced, a pair of "parent" solutions is selected for breeding from the pool selected previously. By producing a "child" solution using the above methods of crossover and mutation, a new solution is created which typically shares many of the characteristics of its "parents". New parents are selected for each new child, and the process continues until a new population of solutions of appropriate size is generated. Although reproduction methods that are based on the use of two parents are more "biology inspired", some research suggests that more than two "parents" generate higher quality chromosomes.

These processes ultimately result in the next generation population of chromosomes that is different from the initial generation. Generally the average fitness will have increased by this procedure for the population, since only the best organisms from the first generation are selected for breeding, along with a small proportion of less fit solutions. These less fit solutions ensure genetic diversity within the genetic pool of the parents and therefore ensure the genetic diversity of the subsequent generation of children.

Opinion is divided over the importance of crossover versus mutation. There are many references in Fogel (2006) that support the importance of mutation-based search.

Although crossover and mutation are known as the main genetic operators, it is possible to use other operators such as regrouping, colonization-extinction, or migration in genetic algorithms.[5]

It is worth tuning parameters such as the mutation probability, crossover probability and population size to find reasonable settings for the problem class being worked on. A very small mutation rate may lead to genetic drift (which is non-ergodic in nature). A recombination rate that is too high may lead to premature convergence of the genetic algorithm. A mutation rate that is too high may lead to loss of good solutions, unless elitist selection is employed.

Termination

This generational process is repeated until a termination condition has been reached. Common terminating conditions are:

- A solution is found that satisfies minimum criteria
- Fixed number of generations reached
- Allocated budget (computation time/money) reached
- The highest ranking solution's fitness is reaching or has reached a plateau such that successive iterations no longer produce better results
- Manual inspection
- Combinations of the above

A test field with four decreasing maximum points.
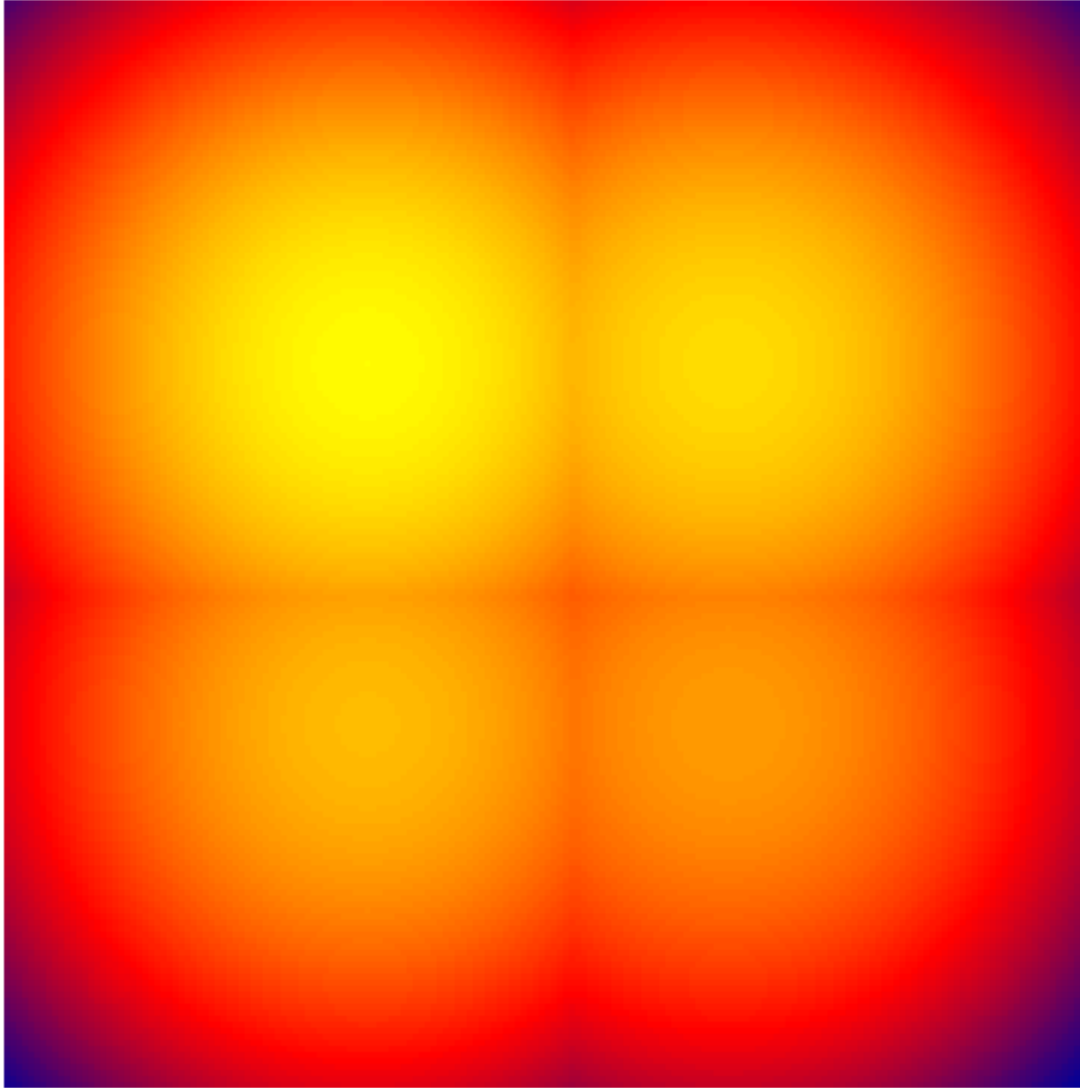
1st generation – random

Randomly generate individuals with the value in each dimension evenly distributed. (The blue dots are the top 30% of the individuals.)
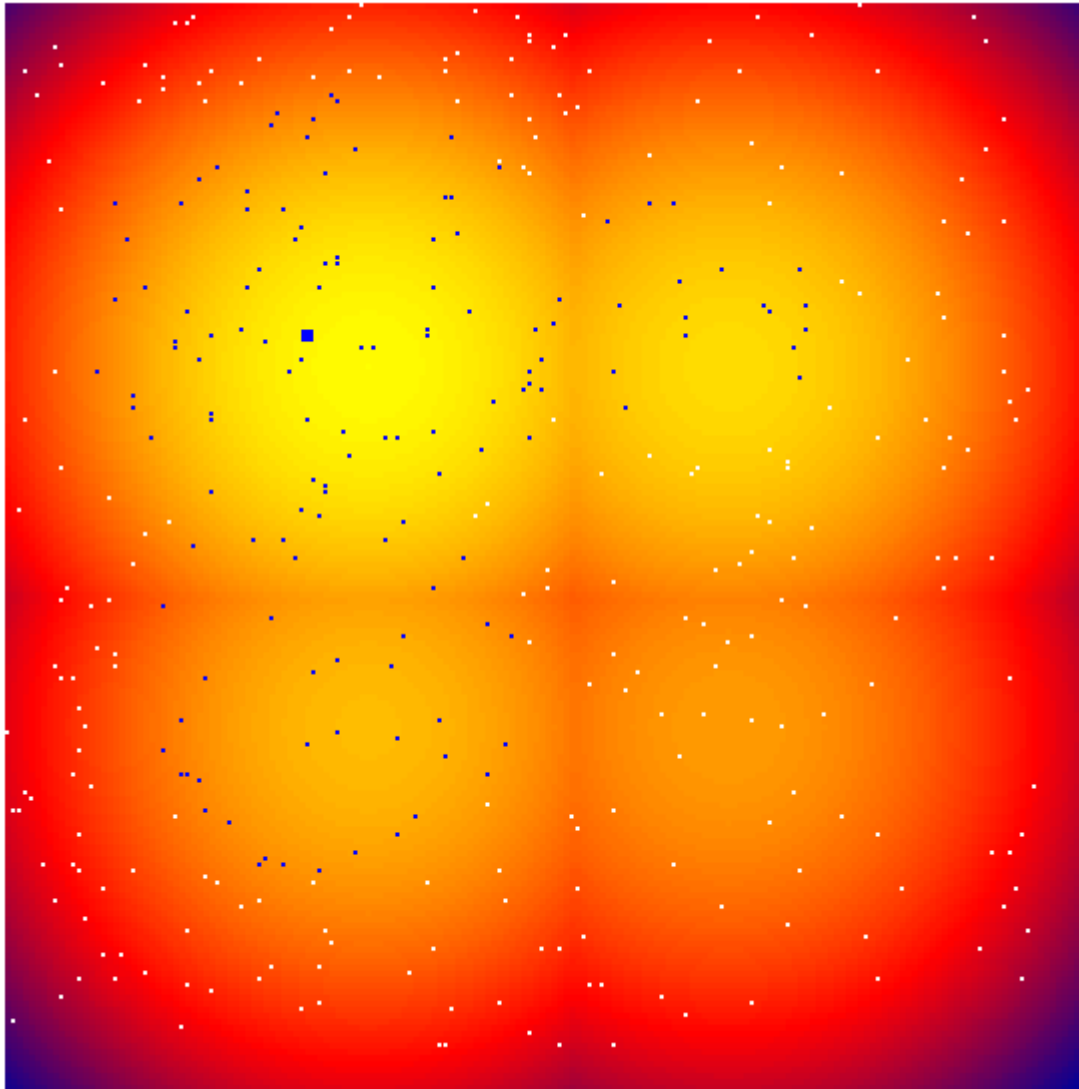
2nd generation

The individuals are starting to converge around the best value because the highest individuals are prioritized during the breeding.
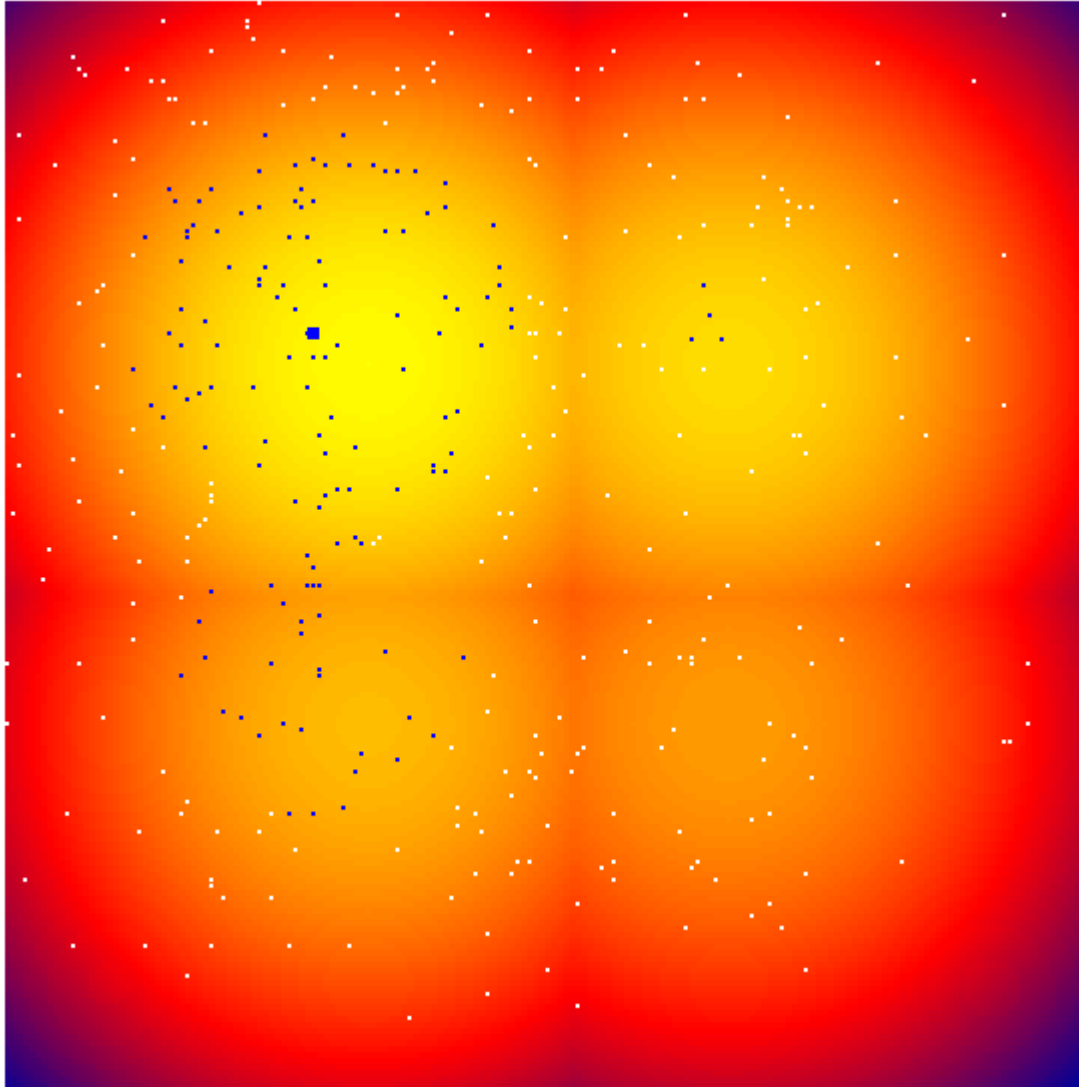
5th generation

By the 5th generation the individuals are concentrated around the upper left where the highest maximum is located.
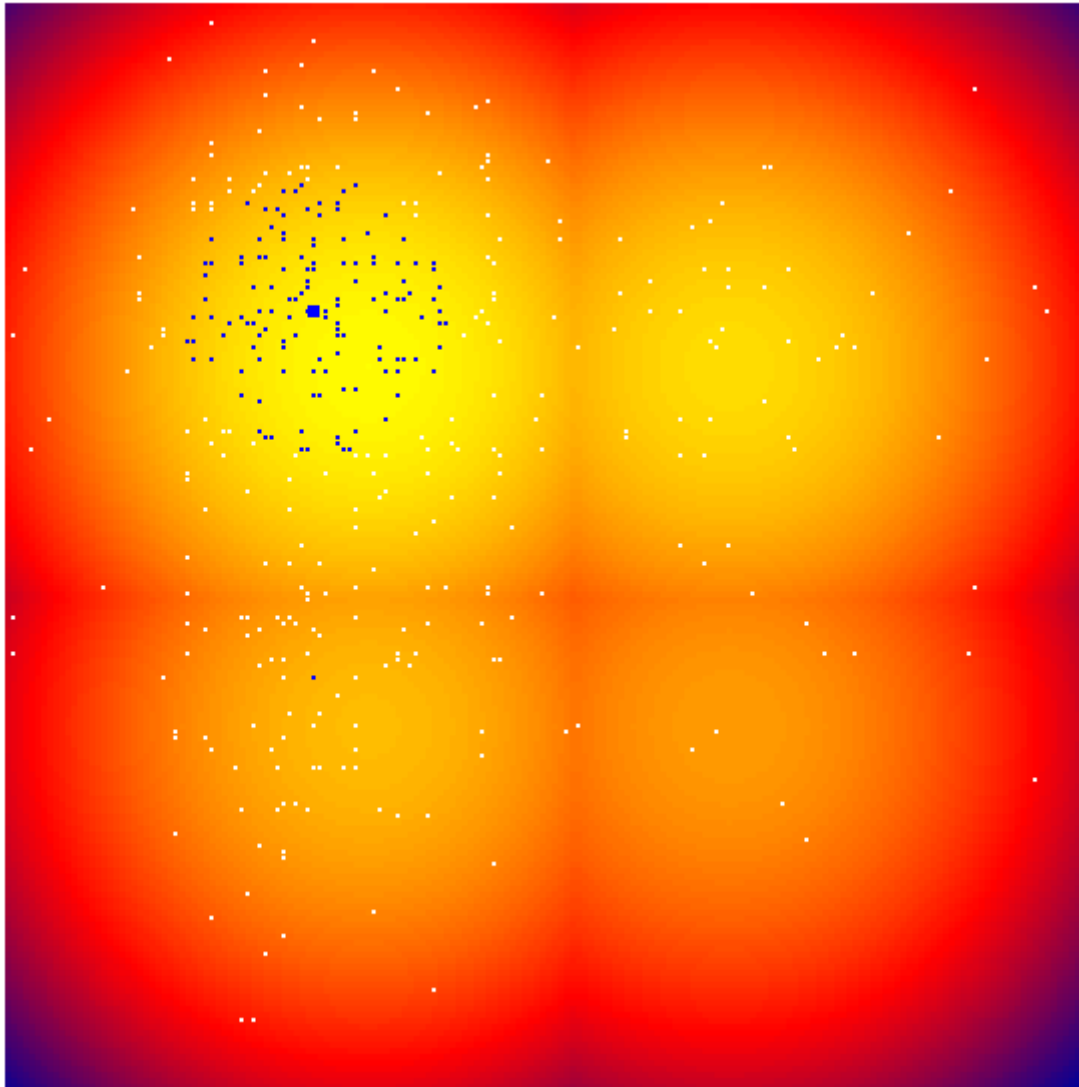
Individuals vs. Generations

There is a big question as whether there should be more individuals and fewer generations vs. less individuals and more generations. The idea is the same number of total individuals will be calculated. At one end of the spectrum is all individuals and a single generation (1x10,000). The other end of the spectrum is more generations and less individuals (100 x 100). The best performing combination here is 50 generations and 200 individuals. Some minimum number of individuals are needed in the first generation as this gives us a random coverage across the total solution space. Without these first individuals we may not get enough coverage of the space to locate multiple solutions. Then a significant number of generations are necessary to allow the breeding and mutations to occure.
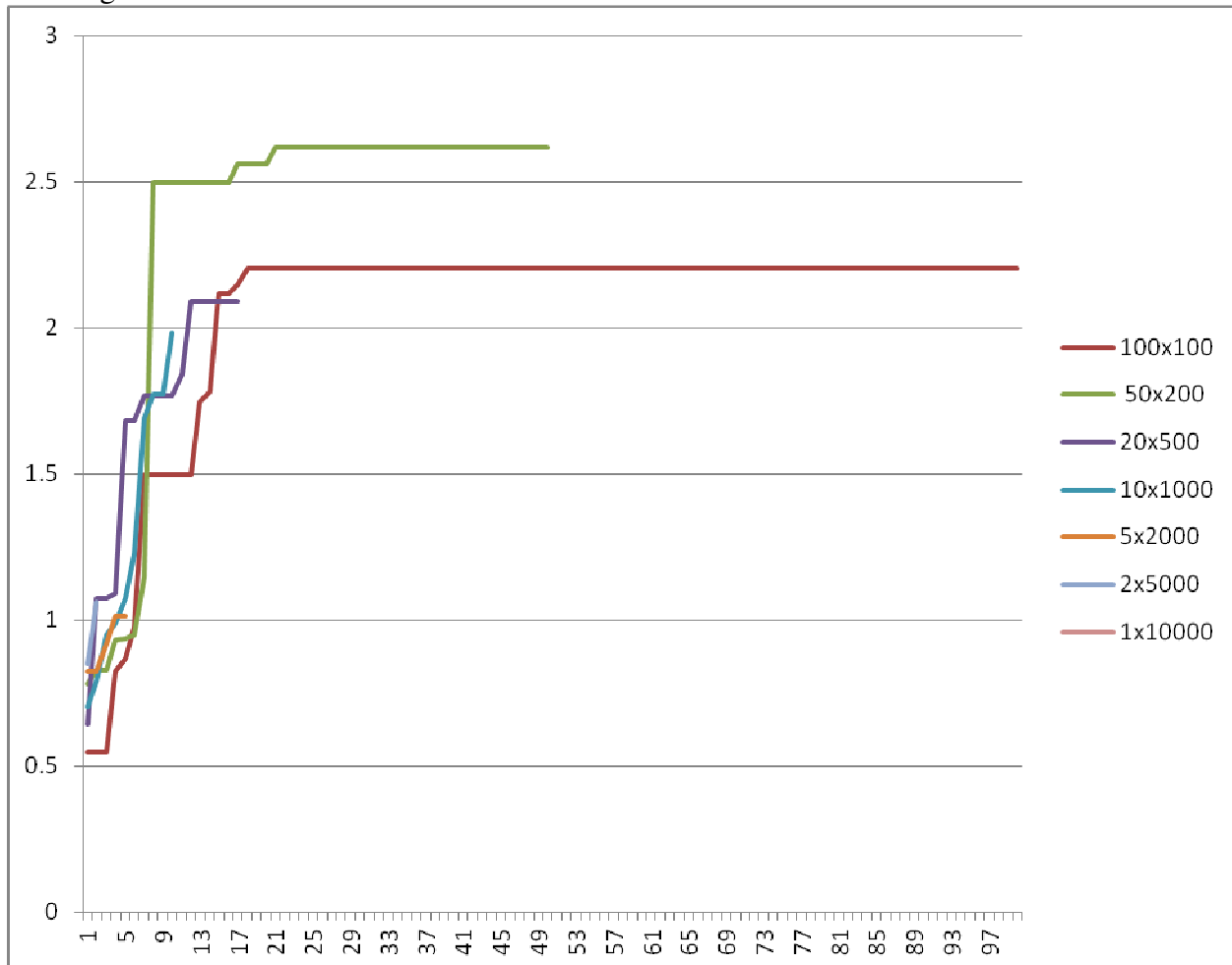
Tuning the Filters

Filter tuning is done with the Genetic Algorithm. Each GA will attempt to maximize the profit across the test space.

Alpha

These are the available parameters to the genetic algorithm and the total number of unique combinations.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Gap Up	4	60	4	15
Alpha Days	20	260	20	13
Alpha Exponent	0.010	0.100	0.010	10
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				1,747,200

Genetic Algorithm generational results summary. The 'best' column has is the measured average percent (0.031*100) = 3.1% for each trade and what the GA is optimizing.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	7,500	261	0.031	882.384s	8.5
2	2,827	261	0.031	409.294s	6.9
3	2,625	261	0.031	440.906s	6.0
4	2,405	270	0.031	431.269s	5.6
5	2,233	270	0.031	360.048s	6.2
6	2,172	270	0.031	312.407s	7.0
7	2,170	270	0.031	245.935s	8.8
8	2,252	269	0.032	237.429s	9.5
9	2,355	260	0.032	239.235s	9.8
10	2,466	260	0.033	210.772s	11.7
11	2,637	260	0.033	210.830s	12.5

12	2,841	260	0.033	182.818s	15.5
13	3,140	260	0.033	182.269s	17.2
14	3,527	260	0.033	212.757s	16.6
15	3,970	260	0.033	248.290s	16.0
16	4,489	260	0.033	289.368s	15.5
17	5,113	260	0.033	346.157s	14.8
18	5,883	260	0.033	432.004s	13.6
19	6,827	260	0.033	484.134s	14.1
20	8,894	260	0.033	687.672s	12.9
	76,326				

Parameter coverage is displayed in the following diagrams. The genetic algorithm loops thru multiple individuals with each generation to cover the test space.

This is generation #1 and does not have very good results yet but does have good random coverage of the test space (4.083% average profit).
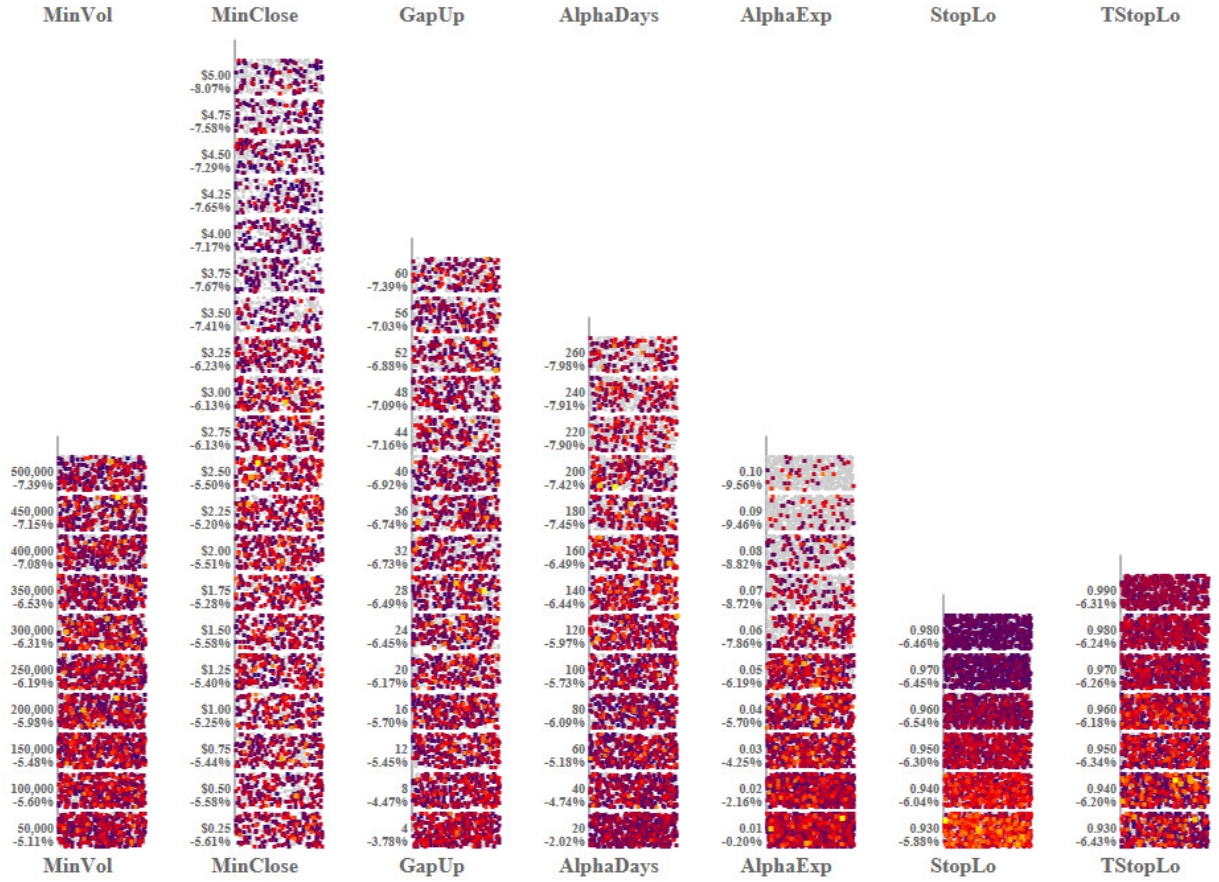
Here is generation #10 and is doing better (based on the hotter colors) and is starting to concentrate on the better sets of parameters (4.582% average profit).
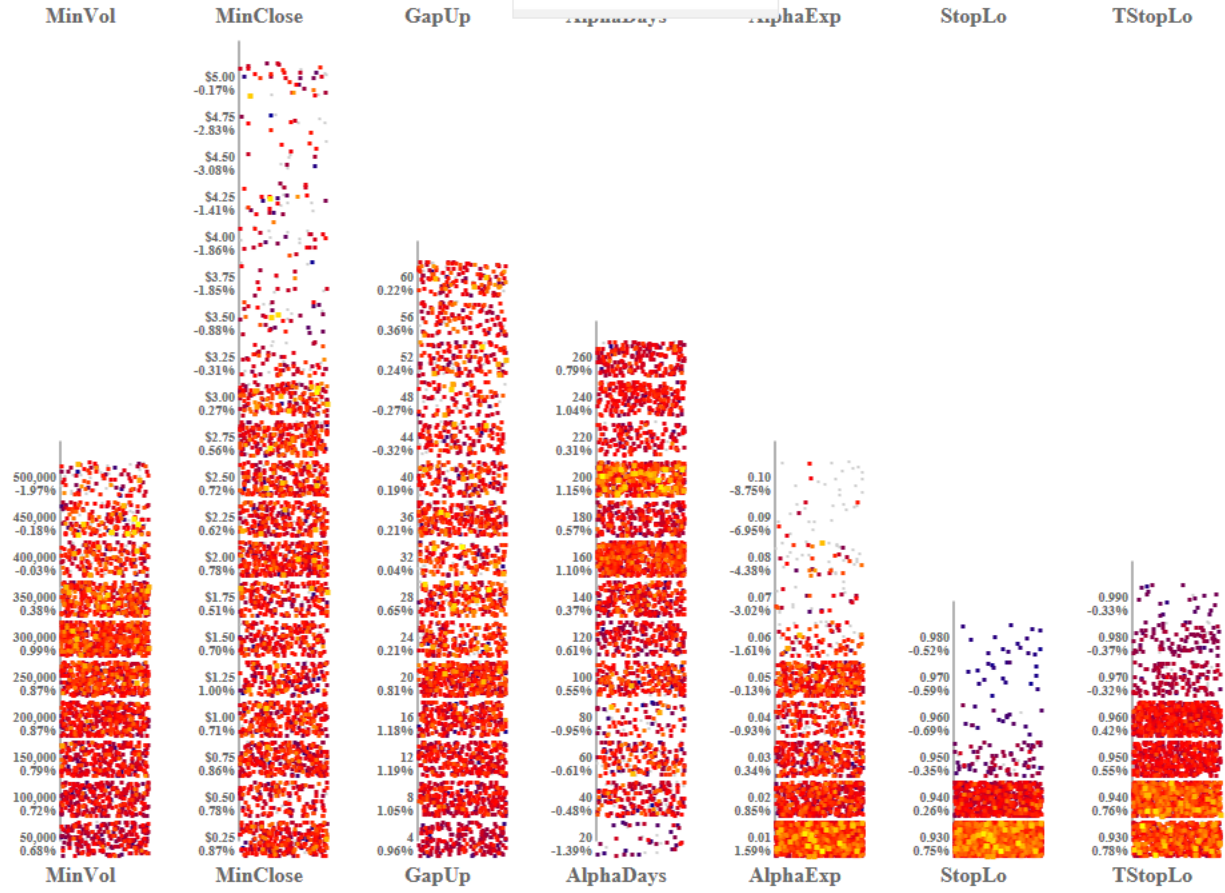
Generation #20 (4.789% average profit).
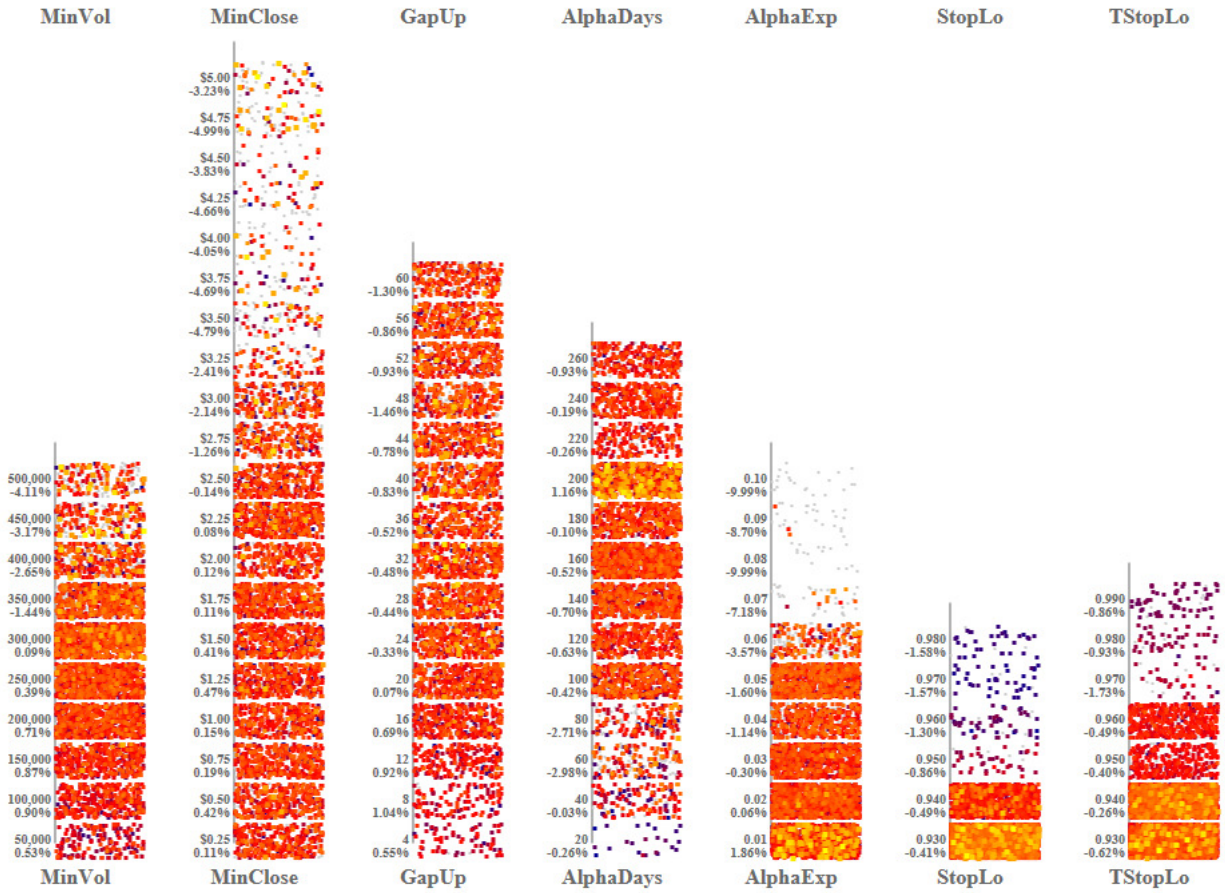
Finally generation #30 (4.789% average profit).

MinVol	MinClose	GapUp	AlphaDays	AlphaExp	StopLo	TStopLo
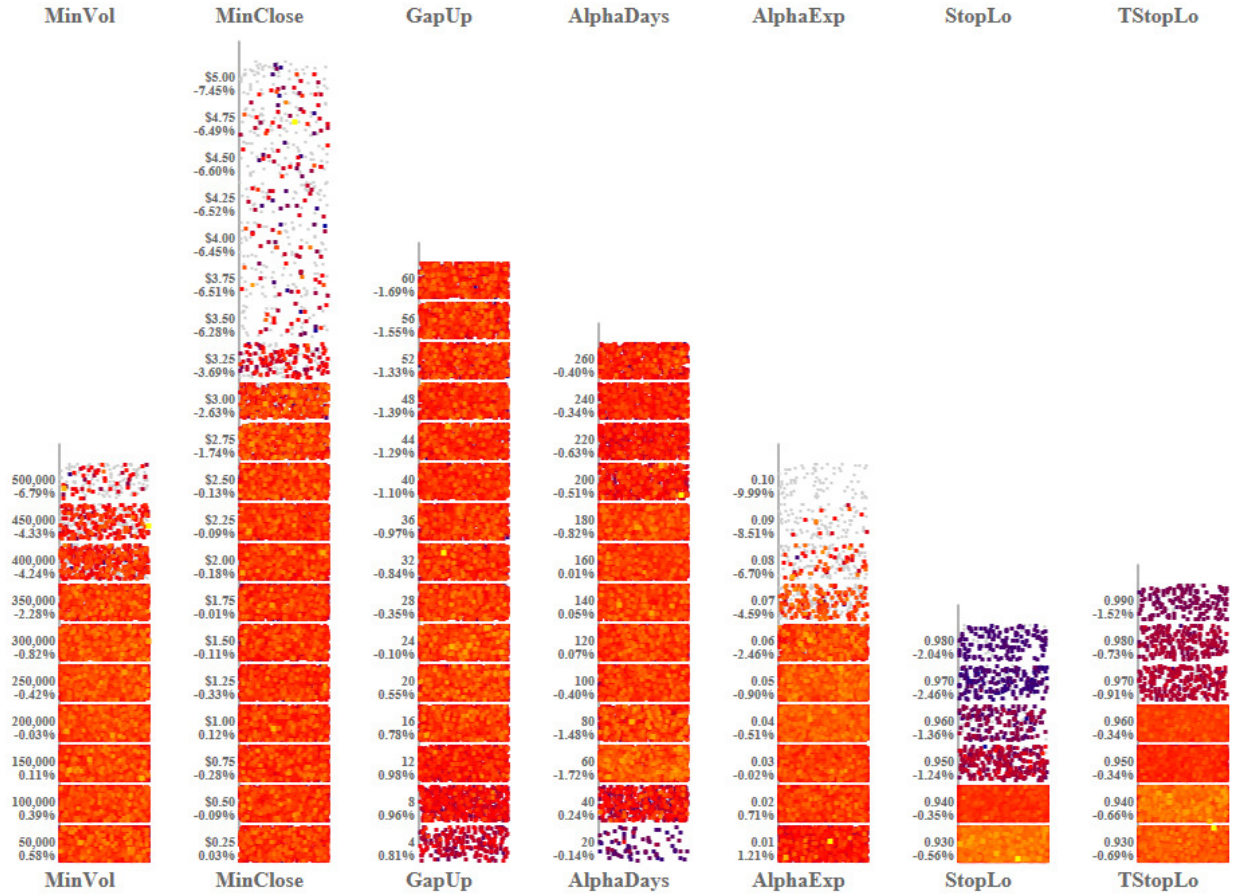
Annual Return

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Weekly Annual Return	0.050	0.200	0.010	16
Sharpe Ratio	1.000	2.000	0.100	11
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				157,696

Aroon

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Volume Ratio	1.000	1.250	0.010	26
Aroon Days	10	110	5	21
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				489,216

Breakout

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4

Minimum Close	0.250	1.000	0.250	4
Gap Up	4	60	4	15
Breakout Days	40	120	40	3
Breakout High	3.000	4.000	1.000	2
BrkDel2	0.010	0.025	0.005	4
Breakout Minimum Percent	0.010	0.015	0.005	1
Breakout Delta Percent	0.010	0.020	0.005	3
Up Days in Halfs	2	20	2	10
Volume Days Half	4.000	8.000	1.000	5
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				48,384,000

Genetic Algorithm generational results summary.

Generation	Individuals	Trades	Profit Each	Seconds
1	3,500	1		2.652s
2	30,000	1		21.019s
3	30,000	1		22.175s
4	30,000	1		22.561s
5	30,000	1		24.236s
6	30,000	229	1.16%	24.307s
7	30,000	229	1.16%	24.300s
8	30,000	229	1.16%	25.228s
9	30,000	229	1.16%	26.660s
10	30,000	229	1.16%	25.908s
11	30,000	229	1.16%	26.585s
12	30,000	229	1.16%	26.547s
13	30,000	229	1.16%	29.488s

14	30,000	229	1.16%	28.219s
15	30,000	229	1.16%	29.167s
16	30,000	229	1.16%	30.932s
17	30,000	229	1.16%	29.428s
18	30,000	229	1.16%	29.809s
19	30,000	229	1.16%	30.998s
20	30,000	229	1.16%	32.029s

Exponential Close

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Volume Ratio	1.000	1.250	0.010	26
Exponential Close Exponent	1.001	1.010	0.001	10
Exponential Close Sets	2	10	1	9
Exponential Close Days	2	10	1	9
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				18,869,760

Dividend Aristocrats

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	500,000	25,000	20
Minimum Close	0.250	5.000	0.250	20
Dividend Aristocrats	1.000	1.000	1.000	1

Up Moving Average Sets	2.000	4.000	1.000	3
Up Moving Average Days	10	90	5	17
Up Moving Average Ratio	1.000	1.250	0.005	51
Gap Up	2	20	1	19
Up Days in Halfs	2	20	2	10
Stop Loss	0.940	0.980	0.005	9
Trailing Stop Loss	0.940	0.990	0.005	11
Total Test Combinations			1,904,912,480	

Growth

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Up Moving Average Sets	3.000	5.000	1.000	3
Up Moving Average Sets Days	20	180	20	9
Up Moving Average Sets Ratio	1.005	1.100	0.005	20
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Gap Up	4	60	4	15
Volume Ratio	1.000	1.250	0.010	26
Price Ratio	1.000	1.050	0.010	6
Up Days in Halfs	2	20	2	10
Total Test Combinations			1,563,045,888	

Growth EMA

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Volume Ratio	1.000	1.250	0.010	26
Price Ratio	1.000	1.050	0.010	6
Up Moving Average Sets	3.000	5.000	1.000	3
Up Moving Average Sets Days	20	180	20	9
Up Moving Average Sets Ratio	-1.005	-1.100	-0.005	20
Gap Up	4	60	4	15
Up Days in Halfs	2	20	2	10
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				1,563,045,888

MACD Crossover

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Gap Up	4	60	4	15
MACD #1 Days	2	12	1	11
MACD #2 Days	13	20	1	8
MACD Exponent	0.050	1.000	0.050	19
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				22,471,680

New High

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Volume Ratio	1.000	1.250	0.010	26
Price Ratio	1.000	1.050	0.010	6
New High Days	60	240	20	10
Not Provious High Days	60	480	20	22
Up Moving Average Sets	3.000	5.000	1.000	3
Up Moving Average Sets Days	20	180	20	9
Up Moving Average Sets Ratio	1.005	1.100	0.005	20
Gap Up	4	60	4	15
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				27,271,168

Relative Strength Indicator Crossover

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Gap Up	4	60	4	15
RSI Minimum	0.050	0.600	0.050	11
RSI Delta	0.040	0.300	0.020	14
Breakout Days	40	120	40	3
Breakout High	3.000	4.000	1.000	2
BrkDel2	0.010	0.025	0.005	4
Breakout Minimum Percent	0.010	0.015	0.005	1
Breakout Delta Percent	0.010	0.020	0.005	3

Up Days in Halves		2	20	2	10
Volume Days Half		4.000	8.000	1.000	5
Stop Loss		0.900	0.980	0.010	8
Trailing Stop Loss		0.960	0.990	0.005	7
Total Test Combinations				1,138,798,592	

Genetic Algorithm generational results summary.

Generation	Individuals	Trades	Profit Each	Seconds
1	3,500	0		15.762s
2	30,000	17	0.85%	122.062s
3	30,000	17	0.85%	122.946s
4	30,000	15	1.56%	125.847s
5	30,000	15	1.56%	125.084s
6	30,000	15	1.56%	123.194s
7	30,000	15	1.56%	123.612s
8	30,000	15	1.56%	124.652s
9	30,000	15	1.56%	124.189s
10	30,000	19	2.01%	127.062s
11	30,000	19	2.01%	128.666s
12	30,000	19	2.01%	129.761s
13	30,000	19	2.01%	131.445s
14	30,000	19	2.01%	130.854s
15	30,000	19	2.01%	132.877s
16	30,000	19	2.01%	131.861s
17	30,000	18	2.04%	133.062s
18	30,000	15	3.40%	133.628s
19	30,000	15	3.40%	132.669s
20	30,000	15	3.40%	131.200s

Turtle Breakout

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Gap Up	4	60	4	15
Turtle Breakout Days	10	65	5	12
Turtle Breakout Percent	0.005	0.030	0.005	5
Up Days in Halfs	2	20	2	10
Volume Days Half	4.000	8.000	1.000	5
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				40,320,000

Up

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	100,000	25,000	4
Minimum Close	0.250	1.000	0.250	4
Volume Ratio	1.000	1.250	0.010	26
Price Ratio	1.000	1.050	0.010	6
Up Moving Average Sets	3.000	5.000	1.000	3
Up Moving Average Sets Days	20	180	20	9
Up Moving Average Sets Ratio	1.005	1.100	0.005	20
Up Moving Average #1 Days	3	15	1	13
Up Moving Average #2 Days	20	180	20	9
Skip big Up days	1.000	2.500	0.100	16

	Minimum	Maximum	Delta	Iterations
Gap Up	4	60	4	15
Volatility	0.000	0.250	0.010	26
Volatility Days	10	60	5	11
Close to Close Halfs	2	16	2	8
Volume Days Half	4.000	8.000	1.000	5
Up Days in Halfs	2	20	2	10
Stop Loss	0.900	0.980	0.010	8
Trailing Stop Loss	0.960	0.990	0.005	7
Total Test Combinations				347,078,656

Up2

These are the available parameters to the genetic algorithm.

Name	Minimum	Maximum	Delta	Iterations
Minimum Volume	25,000	500,000	25,000	20
Minimum Close	0.250	5.000	0.250	20
Price Ratio	1.000	1.250	0.010	26
IvsRat	1.000	2.000	0.050	21
IvsSets	1	10	1	10
IvsDays	5	50	5	10
Voli	0.000	0.250	0.010	26
VoliDays	10	60	5	11
Up Days in Halfs	2	16	2	8
Stop Loss	0.920	0.980	0.005	12
Trailing Stop Loss	0.920	0.990	0.005	14
Total Test Combinations				1,714,503,680

Tuning the Confidence

Confidence is measured from a set of parameters that predict how much profit a given pick will generate. Confidence is generated from a Genetic Algorithm that tries all the parameters to see what combination correlates with the back tested profit. Not every parameter is tried with each individual. Confidence is then normalized to a 0-100 scale.

The following parameters are tested for each filter.

Name	Minimum	Maximum	Delta	Iterations
Volume Ratio Days 1	5	30	1	26
Volume Ratio Days 2	2	10	1	9
Volume Ratio % of Score	10	100	10	10
Price Ratio Days 1	5	30	1	26
Price Ratio Days 2	2	10	1	9
Price Ratio % of Score	10	100	10	10
Weekly Annual Return Years	1.000	5.000	1.000	5
Weekly Annual Return % of Score	10	100	10	10
Sharpe Ratio Years	1.000	5.000	1.000	5
Sharpe Ratio % of Score	10	100	10	10
Price Rise Days	20	260	20	13
Price Rise % of Score	10	100	10	10
Price Rise Rate Days	20	260	20	13
Price Rise Rate % of Score	10	100	10	10
Weighted Up Days	4	20	2	9
Weighted Up % of Score	10	100	10	10
Volatility Days	10	100	10	10
Volatility % of Score	10	100	10	10
Alpha Days	20	260	20	13
Alpha % of Scoree	10	100	10	10

Total Test Combinations 109,686,784

Alpha

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	9%
Price Ratio	11%
Annual Return	9%
Sharpe Ratio	19%
Price Rise	15%
Price Rise Rate	17%
Volatility	19%

which results in this correlation of profit vs. confidence.
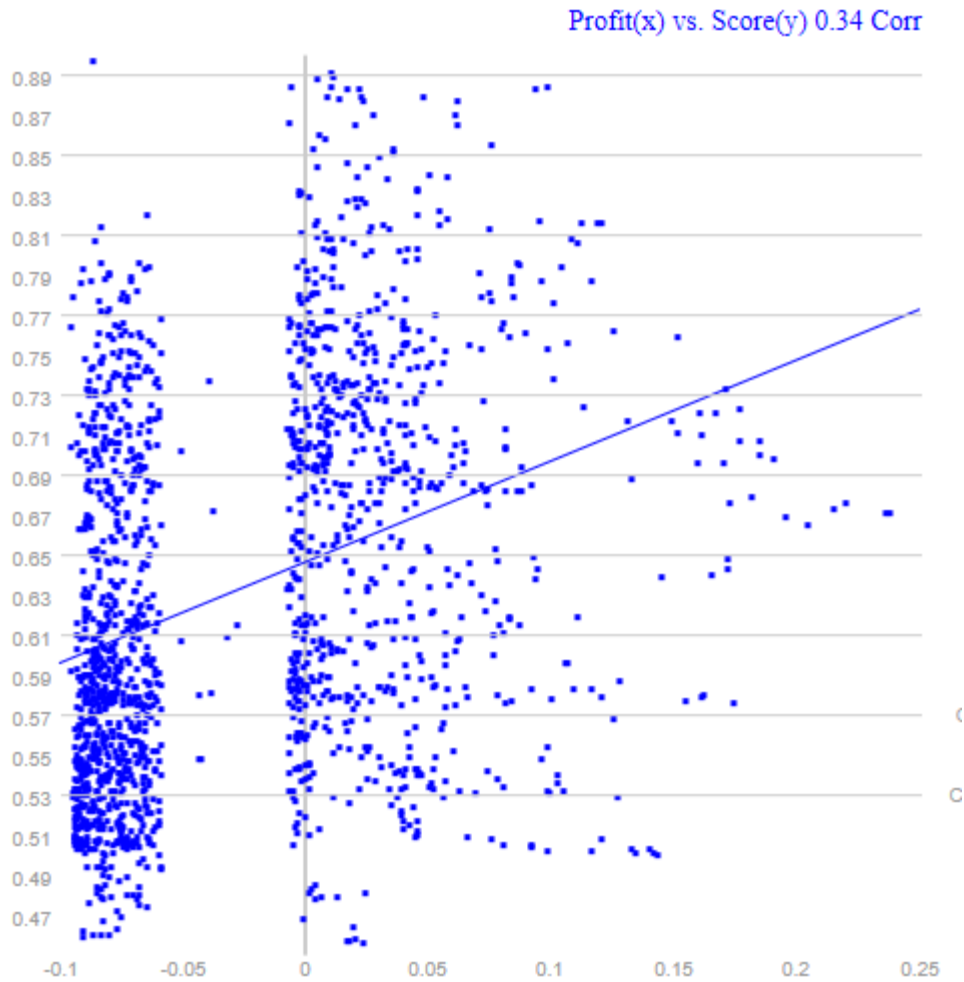
Profit(x) vs. Score(y) 0.34 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.299	185.025s	13.5
2	2,500	0	0.312	213.666s	11.7
3	2,500	0	0.312	226.107s	11.1
4	2,500	0	0.315	238.887s	10.5
5	2,500	0	0.315	255.175s	9.8
6	2,500	0	0.319	271.406s	9.2
7	2,500	0	0.319	283.530s	8.8
8	2,500	0	0.323	303.069s	8.2
9	2,500	0	0.323	316.089s	7.9
10	2,500	0	0.323	319.675s	7.8

11	2,500	0	0.323	327.356s	7.6
12	2,500	0	0.325	334.471s	7.5
13	2,500	0	0.328	336.857s	7.4
14	2,500	0	0.328	334.892s	7.5
15	2,500	0	0.330	340.297s	7.3
16	2,500	0	0.330	340.642s	7.3
17	2,500	0	0.331	342.824s	7.3
18	2,500	0	0.331	351.247s	7.1
19	2,500	0	0.333	347.460s	7.2
20	2,500	0	0.335	362.282s	6.9
21	2,500	0	0.335	353.658s	7.1
22	2,500	0	0.335	348.905s	7.2
23	2,500	0	0.335	357.089s	7.0
24	2,500	0	0.335	355.219s	7.0
25	2,500	0	0.335	363.636s	6.9
26	2,500	0	0.335	362.811s	6.9
27	2,500	0	0.336	366.655s	6.8
28	2,500	0	0.336	368.748s	6.8
29	2,500	0	0.336	364.853s	6.9
30	2,500	0	0.336	373.896s	6.7
	75,000				

Annual Return

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	7%
Price Rise	15%
Price Rise Rate	26%
Weighted Up Days	33%
Volatility	19%

which results in this correlation of profit vs. confidence. This one is very interesting as it is not uniform like the others so there may be a better scoring algorithm that could be discovered.
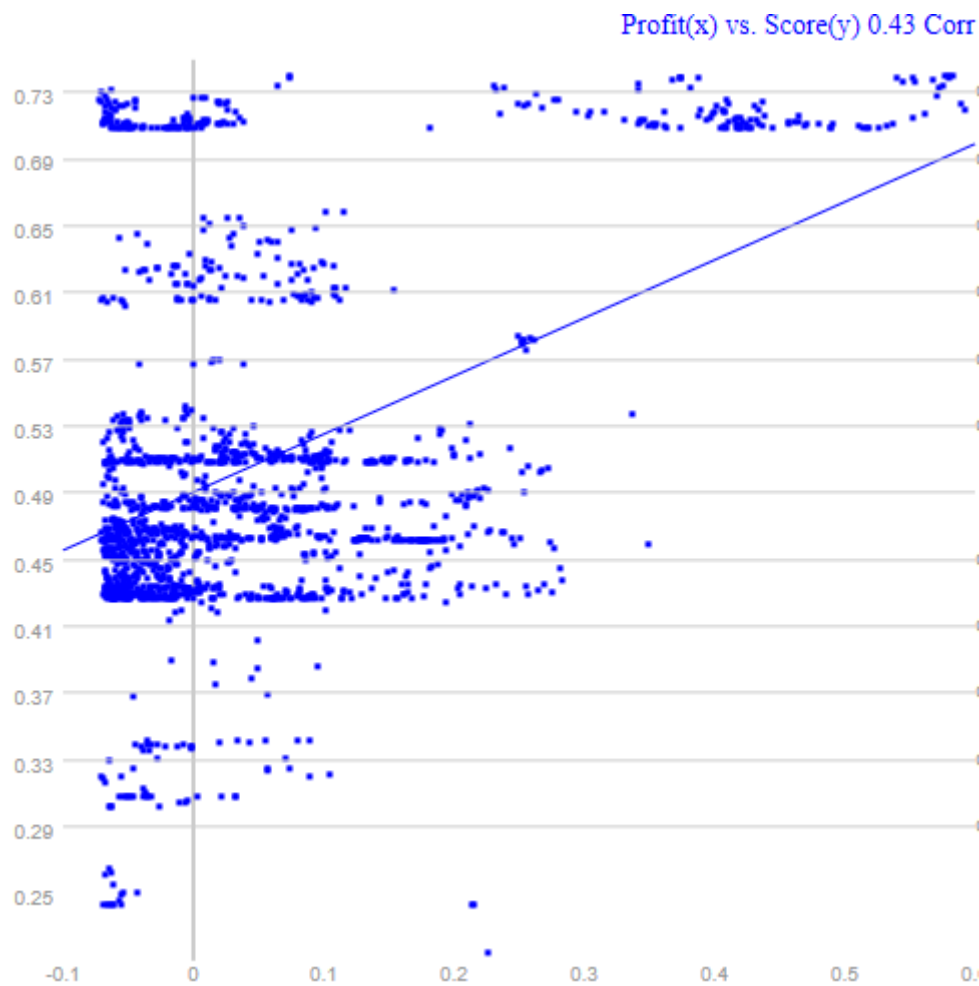
Profit(x) vs. Score(y) 0.43 Corr

With this genetic algorithm generation summary.

Generation Individuals Trades Best Seconds Indiv/Sec

1	2,500	0	0.404	142.681s	17.5
2	2,500	0	0.423	136.587s	18.3
3	2,500	0	0.455	138.158s	18.1
4	2,500	0	0.467	145.613s	17.2
5	2,500	0	0.467	144.964s	17.2
6	2,500	0	0.468	150.545s	16.6
7	2,500	0	0.472	149.408s	16.7
8	2,500	0	0.473	157.200s	15.9
9	2,500	0	0.479	158.988s	15.7
10	2,500	0	0.479	167.205s	15.0
11	2,500	0	0.479	173.958s	14.4
12	2,500	0	0.479	179.286s	13.9
13	2,500	0	0.481	185.379s	13.5
14	2,500	0	0.481	186.753s	13.4
15	2,500	0	0.482	192.892s	13.0
16	2,500	0	0.484	197.728s	12.6
17	2,500	0	0.484	201.983s	12.4
18	2,500	0	0.484	204.540s	12.2
19	2,500	0	0.484	204.893s	12.2
20	2,500	0	0.484	206.556s	12.1
21	2,500	0	0.485	210.234s	11.9
22	2,500	0	0.485	213.981s	11.7
23	2,500	0	0.487	222.724s	11.2
24	2,500	0	0.487	225.812s	11.1
25	2,500	0	0.488	225.656s	11.1
26	2,500	0	0.488	235.140s	10.6
27	2,500	0	0.490	229.442s	10.9
28	2,500	0	0.492	230.873s	10.8
29	2,500	0	0.492	228.923s	10.9
30	2,500	0	0.492	230.349s	10.9
	75,000				

Aroon

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	20%
Price Ratio	17%
Sharpe Ratio	23%
Price Rise Rate	23%
Weighted Up Days	17%

which results in this correlation of profit vs. confidence.

Profit(x) vs. Score(y) 0.28 Corr
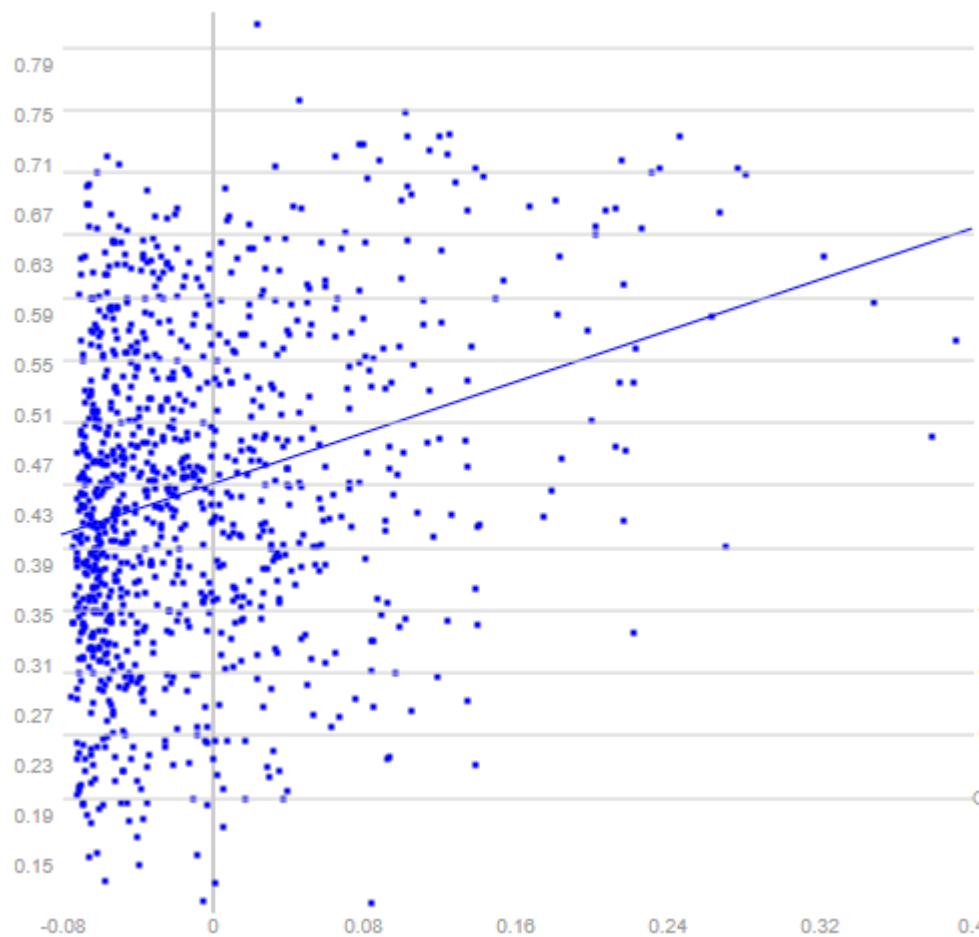
With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.158	52.090s	48.0
2	2,500	0	0.169	57.367s	43.6
3	2,500	0	0.190	68.087s	36.7
4	2,500	0	0.190	73.477s	34.0
5	2,500	0	0.190	73.165s	34.2
6	2,500	0	0.199	79.680s	31.4
7	2,500	0	0.204	81.287s	30.8
8	2,500	0	0.207	82.007s	30.5
9	2,500	0	0.214	83.879s	29.8
10	2,500	0	0.216	79.641s	31.4
11	2,500	0	0.216	84.464s	29.6
12	2,500	0	0.216	86.265s	29.0
13	2,500	0	0.217	89.141s	28.0
14	2,500	0	0.219	92.199s	27.1
15	2,500	0	0.222	97.947s	25.5
16	2,500	0	0.225	100.152s	25.0
17	2,500	0	0.225	104.326s	24.0
18	2,500	0	0.225	108.483s	23.0
19	2,500	0	0.225	111.801s	22.4
20	2,500	0	0.227	113.319s	22.1
21	2,500	0	0.227	114.209s	21.9
22	2,500	0	0.227	119.723s	20.9
23	2,500	0	0.229	116.402s	21.5
24	2,500	0	0.229	118.957s	21.0
25	2,500	0	0.229	119.824s	20.9
26	2,500	0	0.229	121.649s	20.6
27	2,500	0	0.229	127.462s	19.6
28	2,500	0	0.229	122.961s	20.3
29	2,500	0	0.229	123.374s	20.3
30	2,500	0	0.230	124.573s	20.1
	75,000				

Breakout

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	6%
Price Ratio	22%
Annual Return	17%
Sharpe Ratio	17%
Price Rise Rate	39%

which results in this correlation of profit vs. confidence.

Profit(x) vs. Score(y) 0.26 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.213	98.796s	25.3
2	2,500	0	0.222	113.225s	22.1
3	2,500	0	0.224	127.515s	19.6
4	2,500	0	0.224	140.112s	17.8
5	2,500	0	0.233	149.350s	16.7
6	2,500	0	0.233	164.060s	15.2
7	2,500	0	0.233	170.350s	14.7
8	2,500	0	0.245	178.808s	14.0
9	2,500	0	0.245	213.202s	11.7
10	2,500	0	0.245	259.449s	9.6
11	2,500	0	0.251	252.969s	9.9
12	2,500	0	0.251	222.506s	11.2
13	2,500	0	0.251	233.643s	10.7
14	2,500	0	0.251	230.908s	10.8
15	2,500	0	0.251	243.360s	10.3
16	2,500	0	0.252	237.972s	10.5
17	2,500	0	0.253	244.253s	10.2
18	2,500	0	0.255	242.356s	10.3
19	2,500	0	0.255	251.797s	9.9
20	2,500	0	0.255	252.079s	9.9
21	2,500	0	0.255	253.157s	9.9
22	2,500	0	0.255	247.829s	10.1
23	2,500	0	0.257	252.054s	9.9
24	2,500	0	0.257	251.123s	10.0
25	2,500	0	0.258	257.122s	9.7
26	2,500	0	0.258	252.434s	9.9
27	2,500	0	0.258	250.044s	10.0
28	2,500	0	0.258	250.380s	10.0
29	2,500	0	0.258	253.599s	9.9
30	2,500	0	0.258	249.963s	10.0
	75,000				

Exponential Close

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	15%
Price Ratio	38%
Sharpe Ratio	31%
Price Rise Rate	15%

which results in this correlation of profit vs. confidence.
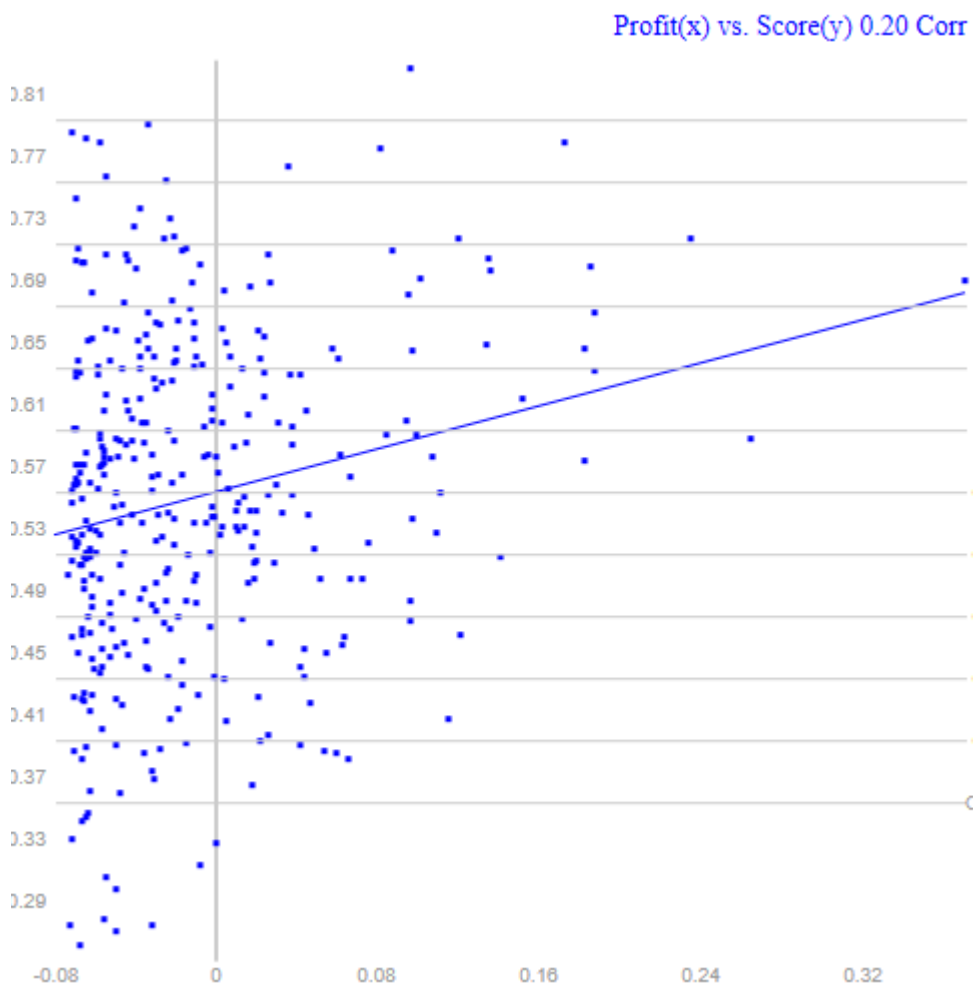
Profit(x) vs. Score(y) 0.20 Corr

With this genetic algorithm generation summary.

Generation Individuals Trades Best Seconds Indiv/Sec

1	2,500	0	0.157	48.601s	51.4
2	2,500	0	0.164	57.608s	43.4
3	2,500	0	0.169	62.964s	39.7
4	2,500	0	0.176	74.614s	33.5
5	2,500	0	0.176	81.968s	30.5
6	2,500	0	0.178	85.392s	29.3
7	2,500	0	0.180	89.889s	27.8
8	2,500	0	0.180	91.994s	27.2
9	2,500	0	0.185	92.590s	27.0
10	2,500	0	0.185	96.785s	25.8
11	2,500	0	0.189	97.386s	25.7
12	2,500	0	0.195	103.552s	24.1
13	2,500	0	0.196	101.966s	24.5
14	2,500	0	0.196	104.597s	23.9
15	2,500	0	0.197	106.628s	23.4
16	2,500	0	0.197	118.343s	21.1
17	2,500	0	0.197	104.300s	24.0
18	2,500	0	0.198	110.599s	22.6
19	2,500	0	0.199	105.864s	23.6
20	2,500	0	0.199	107.976s	23.2
21	2,500	0	0.199	115.411s	21.7
22	2,500	0	0.200	117.879s	21.2
23	2,500	0	0.200	123.928s	20.2
24	2,500	0	0.200	123.134s	20.3
25	2,500	0	0.200	129.150s	19.4
26	2,500	0	0.200	126.104s	19.8
27	2,500	0	0.200	138.060s	18.1
28	2,500	0	0.201	138.057s	18.1
29	2,500	0	0.201	133.626s	18.7
30	2,500	0	0.201	137.010s	18.2
	75,000				

Growth

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Price Ratio	18%
Annual Return	21%
Sharpe Ratio	18%
Price Rise Rate	32%
Weighted Up Days	11%

which results in this correlation of profit vs. confidence.
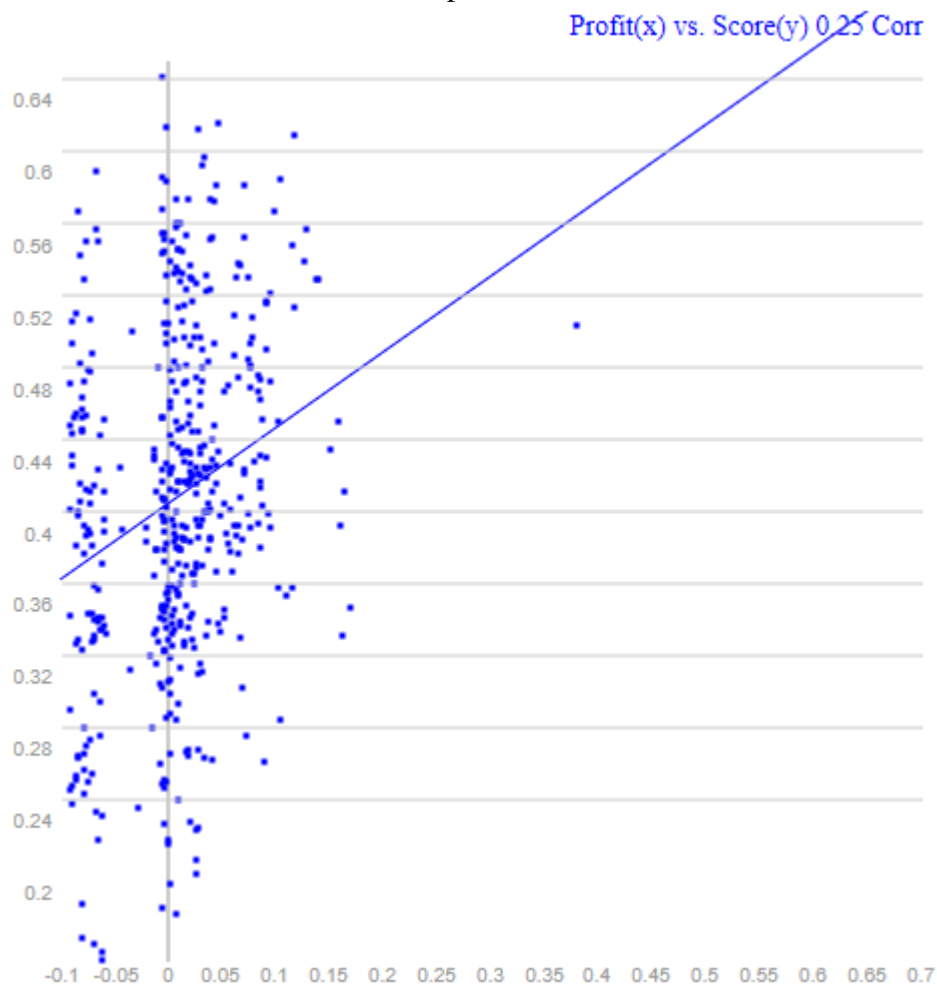
Profit(x) vs. Score(y) 0.25 Corr

With this genetic algorithm generation summary.

Generation Individuals Trades Best Seconds Indiv/Sec

1	2,500	0	0.196	68.172s	36.7
2	2,500	0	0.196	75.409s	33.2
3	2,500	0	0.207	86.091s	29.0
4	2,500	0	0.230	82.247s	30.4
5	2,500	0	0.230	90.538s	27.6
6	2,500	0	0.230	95.293s	26.2
7	2,500	0	0.237	101.028s	24.7
8	2,500	0	0.238	103.900s	24.1
9	2,500	0	0.238	109.414s	22.8
10	2,500	0	0.238	116.228s	21.5
11	2,500	0	0.239	115.002s	21.7
12	2,500	0	0.247	119.379s	20.9
13	2,500	0	0.247	123.670s	20.2
14	2,500	0	0.248	126.919s	19.7
15	2,500	0	0.248	132.194s	18.9
16	2,500	0	0.248	132.991s	18.8
17	2,500	0	0.250	135.635s	18.4
18	2,500	0	0.250	141.193s	17.7
19	2,500	0	0.250	138.128s	18.1
20	2,500	0	0.250	144.522s	17.3
21	2,500	0	0.250	141.137s	17.7
22	2,500	0	0.250	145.895s	17.1
23	2,500	0	0.250	143.192s	17.5
24	2,500	0	0.250	143.655s	17.4
25	2,500	0	0.251	148.469s	16.8
26	2,500	0	0.251	144.838s	17.3
27	2,500	0	0.251	149.861s	16.7
28	2,500	0	0.251	145.660s	17.2
29	2,500	0	0.251	150.353s	16.6
30	2,500	0	0.251	146.703s	17.0
	75,000				

Growth EMA

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	19%
Annual Return	25%
Sharpe Ratio	13%
Price Rise Rate	31%
Weighted Up Days	13%

which results in this correlation of profit vs. confidence.
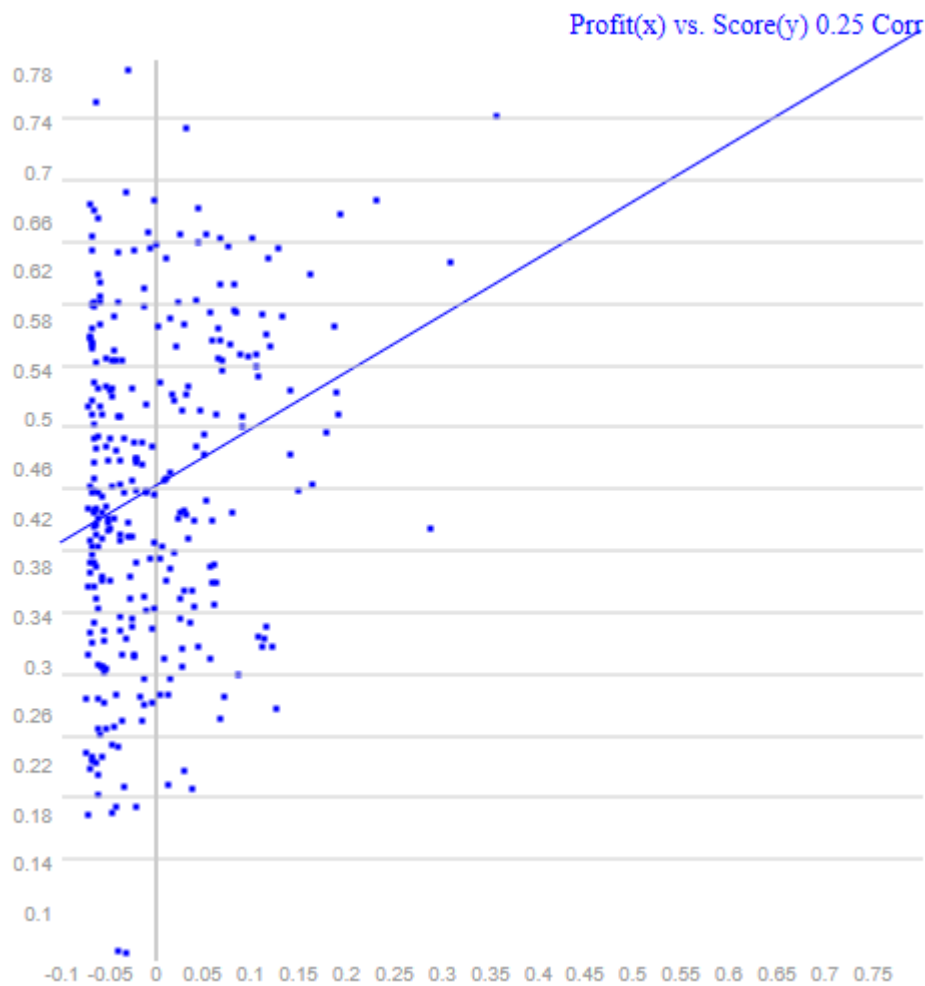
Profit(x) vs. Score(y) 0.25 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,550	0	0.212	44.805s	56.9
2	2,550	0	0.222	50.937s	50.1
3	2,550	0	0.222	60.402s	42.2
4	2,550	0	0.223	60.281s	42.3
5	2,550	0	0.231	66.118s	38.6
6	2,550	0	0.231	71.097s	35.9
7	2,550	0	0.232	74.680s	34.1
8	2,550	0	0.232	75.051s	34.0
9	2,550	0	0.236	80.866s	31.5
10	2,550	0	0.236	84.333s	30.2
11	2,550	0	0.241	88.034s	29.0
12	2,550	0	0.241	92.122s	27.7
13	2,550	0	0.241	94.671s	26.9
14	2,550	0	0.244	97.298s	26.2
15	2,550	0	0.244	99.099s	25.7
16	2,550	0	0.244	104.377s	24.4
17	2,550	0	0.246	103.512s	24.6
18	2,550	0	0.246	110.449s	23.1
19	2,550	0	0.247	106.703s	23.9
20	2,550	0	0.247	112.036s	22.8
21	2,550	0	0.247	109.070s	23.4
22	2,550	0	0.247	113.038s	22.6
23	2,550	0	0.247	108.980s	23.4
24	2,550	0	0.247	112.928s	22.6
25	2,550	0	0.247	110.068s	23.2
26	2,550	0	0.247	114.772s	22.2
27	2,550	0	0.247	116.100s	22.0
28	2,550	0	0.247	112.764s	22.6
29	2,550	0	0.248	116.285s	21.9
30	2,550	0	0.249	116.030s	22.0
	76,500				

MACD Crossover

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Annual Return	21%
Sharpe Ratio	28%
Price Rise Rate	21%
Weighted Up Days	14%
Volatility	17%

which results in this correlation of profit vs. confidence.
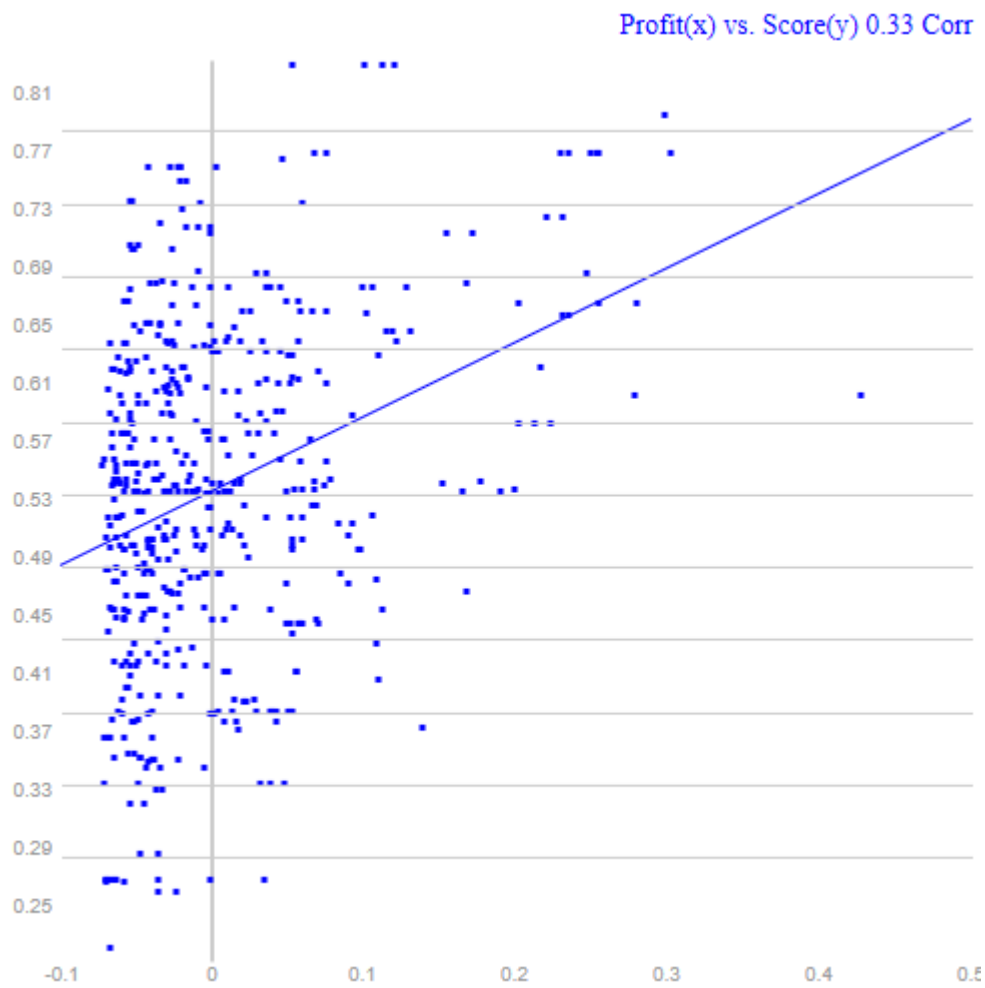
Profit(x) vs. Score(y) 0.33 Corr
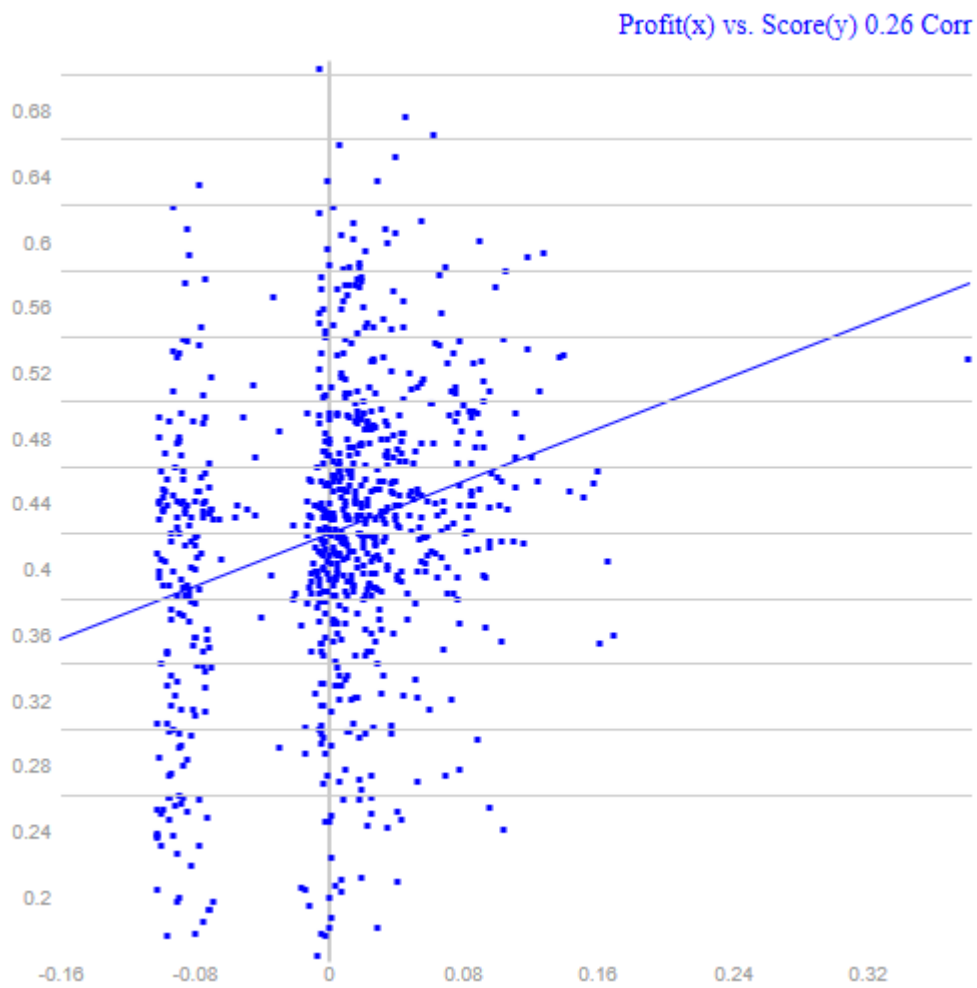
With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	4,000	0	0.237	189.206s	21.1
2	4,000	0	0.269	229.295s	17.4
3	4,000	0	0.272	191.566s	20.9
4	4,000	0	0.283	257.817s	15.5
5	4,000	0	0.283	316.108s	12.7
6	4,000	0	0.294	363.081s	11.0
7	4,000	0	0.295	348.690s	11.5
8	4,000	0	0.296	240.983s	16.6
9	4,000	0	0.299	331.582s	12.1
10	4,000	0	0.310	391.361s	10.2
11	4,000	0	0.313	292.417s	13.7
12	4,000	0	0.316	379.303s	10.5
13	4,000	0	0.316	317.342s	12.6
14	4,000	0	0.319	389.956s	10.3
15	4,000	0	0.319	312.366s	12.8
16	4,000	0	0.319	247.401s	16.2
17	4,000	0	0.319	244.030s	16.4
18	4,000	0	0.319	246.126s	16.3
19	4,000	0	0.320	254.722s	15.7
20	4,000	0	0.320	260.048s	15.4
21	4,000	0	0.320	271.263s	14.7
22	4,000	0	0.320	279.981s	14.3
23	4,000	0	0.320	291.978s	13.7
24	4,000	0	0.320	291.574s	13.7
25	4,000	0	0.320	300.592s	13.3
	100,000				

New High

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Annual Return	16%
Sharpe Ratio	23%
Price Rise Rate	26%
Weighted Up Days	19%
Volatility	16%

which results in this correlation of profit vs. confidence.
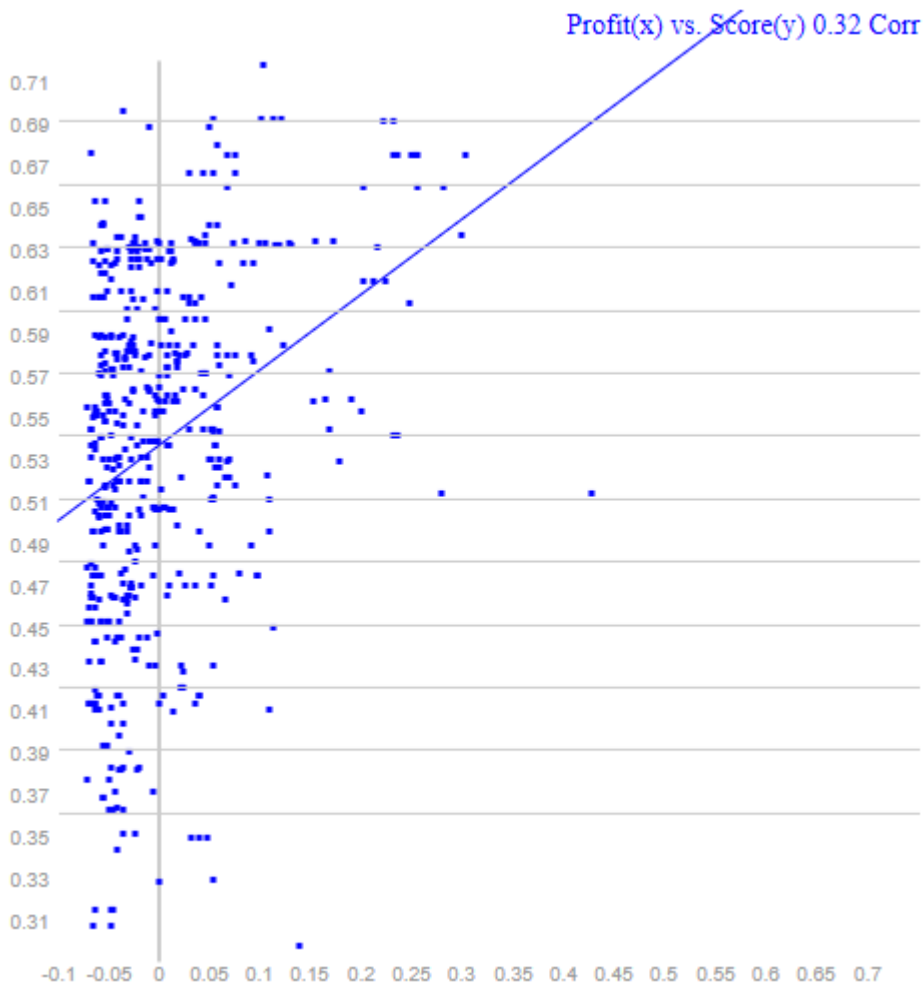
Profit(x) vs. Score(y) 0.32 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.265	73.718s	33.9
2	2,500	0	0.265	93.675s	26.7
3	2,500	0	0.278	108.685s	23.0
4	2,500	0	0.285	117.729s	21.2
5	2,500	0	0.298	123.397s	20.3
6	2,500	0	0.298	129.544s	19.3
7	2,500	0	0.298	133.892s	18.7
8	2,500	0	0.298	136.718s	18.3
9	2,500	0	0.303	141.848s	17.6
10	2,500	0	0.303	143.087s	17.5
11	2,500	0	0.307	147.303s	17.0
12	2,500	0	0.309	149.359s	16.7
13	2,500	0	0.313	153.150s	16.3
14	2,500	0	0.314	152.636s	16.4
15	2,500	0	0.316	160.351s	15.6
16	2,500	0	0.317	164.053s	15.2
17	2,500	0	0.318	163.566s	15.3
18	2,500	0	0.318	170.887s	14.6
19	2,500	0	0.319	175.473s	14.2
20	2,500	0	0.319	177.143s	14.1
21	2,500	0	0.319	184.902s	13.5
22	2,500	0	0.319	197.213s	12.7
23	2,500	0	0.319	204.066s	12.3
24	2,500	0	0.319	198.322s	12.6
25	2,500	0	0.319	199.979s	12.5
26	2,500	0	0.319	204.881s	12.2
27	2,500	0	0.319	198.393s	12.6
28	2,500	0	0.319	197.077s	12.7
29	2,500	0	0.319	198.048s	12.6
30	2,500	0	0.319	198.181s	12.6
	75,000				

Relative Strength Indicator

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	12%
Price Ratio	23%
Sharpe Ratio	12%
Price Rise Rate	31%
Weighted Up Days	23%

which results in this correlation of profit vs. confidence.
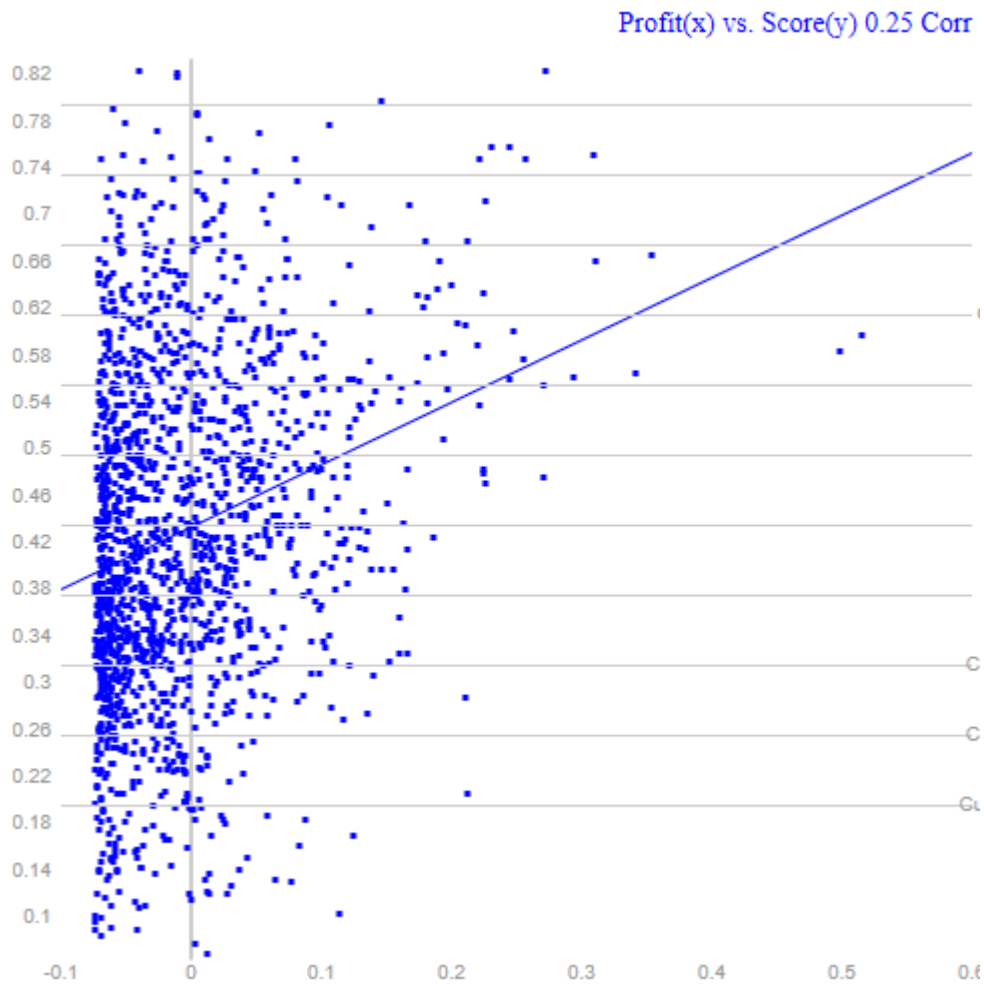
Profit(x) vs. Score(y) 0.25 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.179	120.039s	20.8
2	2,500	0	0.180	134.103s	18.6
3	2,500	0	0.184	136.799s	18.3
4	2,500	0	0.201	141.210s	17.7
5	2,500	0	0.212	147.511s	16.9
6	2,500	0	0.212	149.464s	16.7
7	2,500	0	0.214	156.771s	15.9
8	2,500	0	0.219	159.957s	15.6
9	2,500	0	0.220	159.505s	15.7
10	2,500	0	0.226	173.372s	14.4
11	2,500	0	0.226	181.707s	13.8
12	2,500	0	0.227	189.955s	13.2
13	2,500	0	0.227	200.756s	12.5
14	2,500	0	0.229	216.867s	11.5
15	2,500	0	0.230	225.208s	11.1
16	2,500	0	0.231	247.394s	10.1
17	2,500	0	0.231	307.621s	8.1
18	2,500	0	0.231	281.498s	8.9
19	2,500	0	0.231	268.209s	9.3
20	2,500	0	0.231	269.741s	9.3
21	2,500	0	0.231	276.550s	9.0
22	2,500	0	0.232	279.155s	9.0
23	2,500	0	0.232	291.546s	8.6
24	2,500	0	0.232	275.325s	9.1
25	2,500	0	0.232	263.959s	9.5
26	2,500	0	0.232	280.602s	8.9
27	2,500	0	0.232	281.674s	8.9
28	2,500	0	0.232	280.879s	8.9
29	2,500	0	0.232	282.919s	8.8
30	2,500	0	0.232	305.540s	8.2
	75,000				

Sharpe Ratio

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	35%
Sharpe Ratio	15%
Price Rise Rate	38%
Weighted Up Days	12%

which results in this correlation of profit vs. confidence.
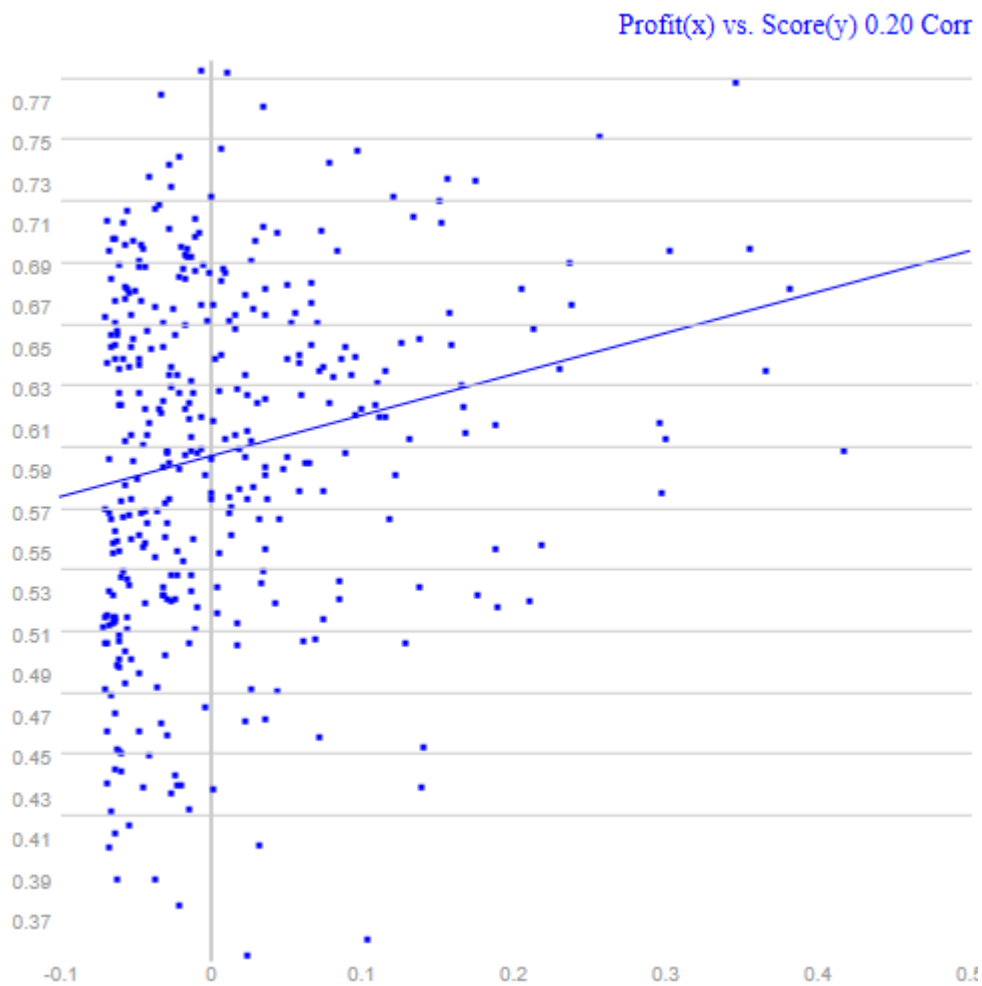
Profit(x) vs. Score(y) 0.20 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.121	44.978s	55.6
2	2,500	0	0.125	49.195s	50.8
3	2,500	0	0.125	49.759s	50.2
4	2,500	0	0.132	53.095s	47.1
5	2,500	0	0.132	53.094s	47.1
6	2,500	0	0.134	57.081s	43.8
7	2,500	0	0.138	58.336s	42.9
8	2,500	0	0.139	59.381s	42.1
9	2,500	0	0.139	62.238s	40.2
10	2,500	0	0.141	61.629s	40.6
11	2,500	0	0.141	64.034s	39.0
12	2,500	0	0.143	65.761s	38.0
13	2,500	0	0.143	66.240s	37.7
14	2,500	0	0.144	70.267s	35.6
15	2,500	0	0.144	75.025s	33.3
16	2,500	0	0.145	76.794s	32.6
17	2,500	0	0.145	75.999s	32.9
18	2,500	0	0.145	81.030s	30.9
19	2,500	0	0.145	83.155s	30.1
20	2,500	0	0.145	85.174s	29.4
21	2,500	0	0.145	87.681s	28.5
22	2,500	0	0.145	89.391s	28.0
23	2,500	0	0.145	90.838s	27.5
24	2,500	0	0.145	90.907s	27.5
25	2,500	0	0.145	95.418s	26.2
26	2,500	0	0.145	97.017s	25.8
27	2,500	0	0.145	99.655s	25.1
28	2,500	0	0.145	100.174s	25.0
29	2,500	0	0.145	101.773s	24.6
30	2,500	0	0.145	102.491s	24.4
	75,000				

Turtle Breakout

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	6%
Price Ratio	29%
Annual Return	6%
Sharpe Ratio	29%
Price Rise Rate	26%
Weighted Up Days	6%

which results in this correlation of profit vs. confidence.
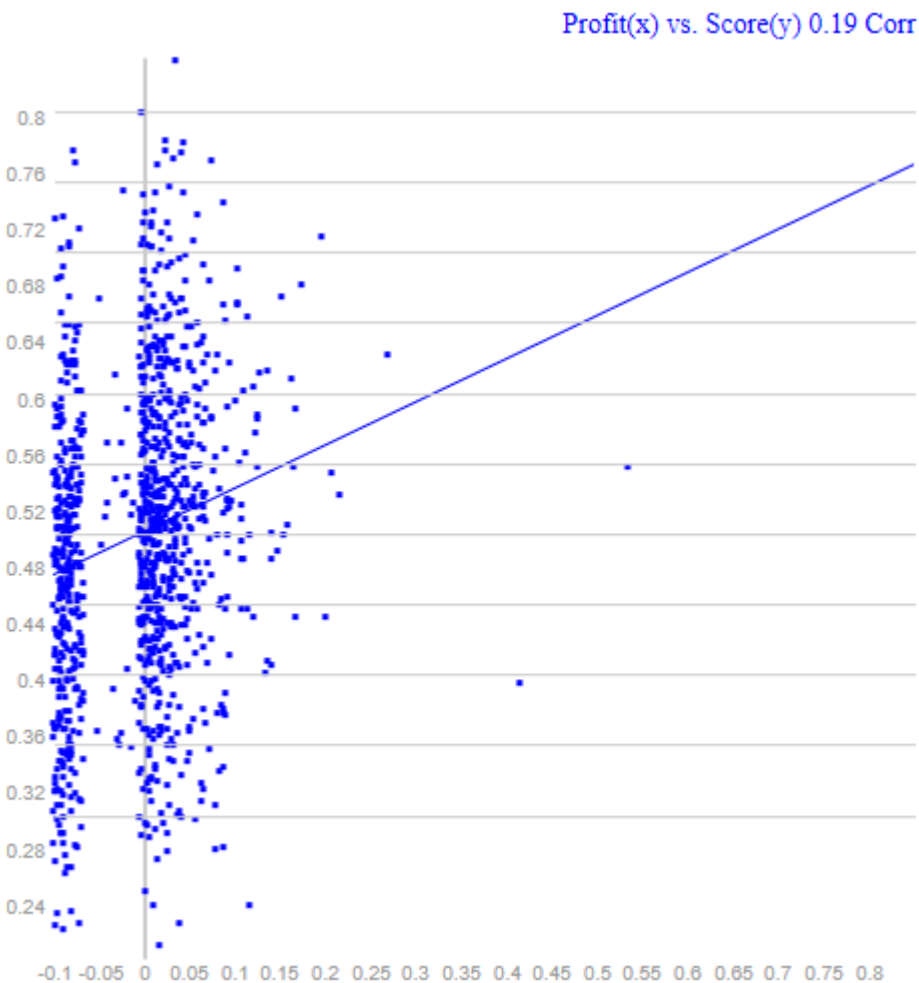
Profit(x) vs. Score(y) 0.19 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.153	129.093s	19.4
2	2,500	0	0.153	154.825s	16.1
3	2,500	0	0.157	171.659s	14.6
4	2,500	0	0.163	181.260s	13.8
5	2,500	0	0.175	198.534s	12.6
6	2,500	0	0.175	207.841s	12.0
7	2,500	0	0.178	217.436s	11.5
8	2,500	0	0.178	222.742s	11.2
9	2,500	0	0.178	227.403s	11.0
10	2,500	0	0.178	231.668s	10.8
11	2,500	0	0.181	240.548s	10.4
12	2,500	0	0.181	248.625s	10.1
13	2,500	0	0.182	258.671s	9.7
14	2,500	0	0.183	264.820s	9.4
15	2,500	0	0.184	266.507s	9.4
16	2,500	0	0.184	280.524s	8.9
17	2,500	0	0.184	290.992s	8.6
18	2,500	0	0.184	298.176s	8.4
19	2,500	0	0.185	307.934s	8.1
20	2,500	0	0.185	315.790s	7.9
21	2,500	0	0.185	321.725s	7.8
22	2,500	0	0.186	329.195s	7.6
23	2,500	0	0.186	328.588s	7.6
24	2,500	0	0.186	331.147s	7.5
25	2,500	0	0.186	337.096s	7.4
26	2,500	0	0.186	333.150s	7.5
27	2,500	0	0.187	334.754s	7.5
28	2,500	0	0.187	340.482s	7.3
29	2,500	0	0.187	335.793s	7.4
30	2,500	0	0.187	343.371s	7.3
	75,000				

Up

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Annual Return	12%
Sharpe Ratio	32%
Price Rise Rate	36%
Volatility	20%

which results in this correlation of profit vs. confidence.
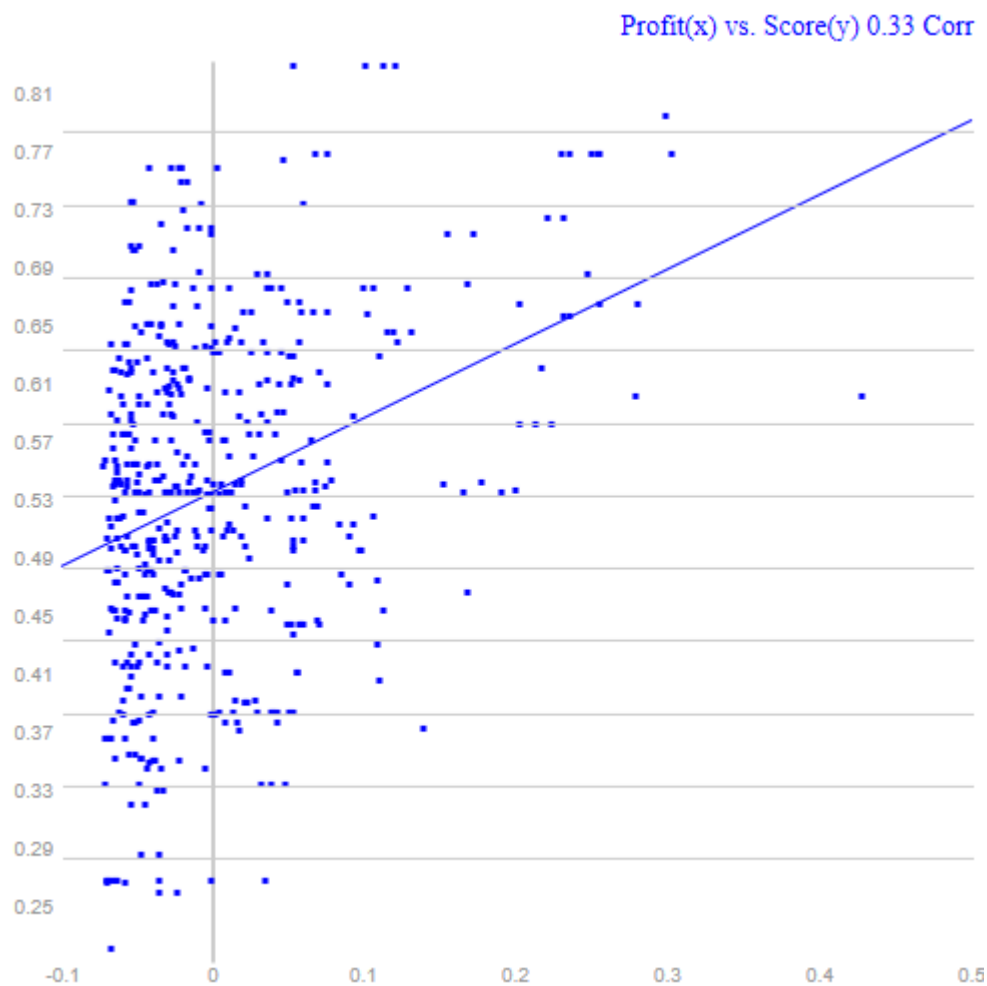
Profit(x) vs. Score(y) 0.33 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	5,000	0	0.275	144.331s	34.6
2	5,000	0	0.286	176.375s	28.3
3	5,000	0	0.287	214.351s	23.3
4	5,000	0	0.306	234.675s	21.3
5	5,000	0	0.306	249.042s	20.1
6	5,000	0	0.306	260.334s	19.2
7	5,000	0	0.306	265.967s	18.8
8	5,000	0	0.316	263.517s	19.0
9	5,000	0	0.316	268.209s	18.6
10	5,000	0	0.318	278.354s	18.0
11	5,000	0	0.323	283.214s	17.7
12	5,000	0	0.323	281.700s	17.7
13	5,000	0	0.324	279.664s	17.9
14	5,000	0	0.324	277.444s	18.0
15	5,000	0	0.324	278.151s	18.0
16	5,000	0	0.325	271.265s	18.4
17	5,000	0	0.325	272.541s	18.3
18	5,000	0	0.325	269.401s	18.6
19	5,000	0	0.325	274.905s	18.2
20	5,000	0	0.325	277.448s	18.0
21	5,000	0	0.325	289.910s	17.2
22	5,000	0	0.325	304.136s	16.4
23	5,000	0	0.325	322.595s	15.5
24	5,000	0	0.325	331.385s	15.1
25	5,000	0	0.325	345.019s	14.5
	125,000				

Up2

This confidence scoring algorithm uses the following blend of the parameters.

Name	Percent
Volume Ratio	9%
Sharpe Ratio	22%
Price Rise Rate	43%
Weighted Up Days	26%

which results in this correlation of profit vs. confidence.
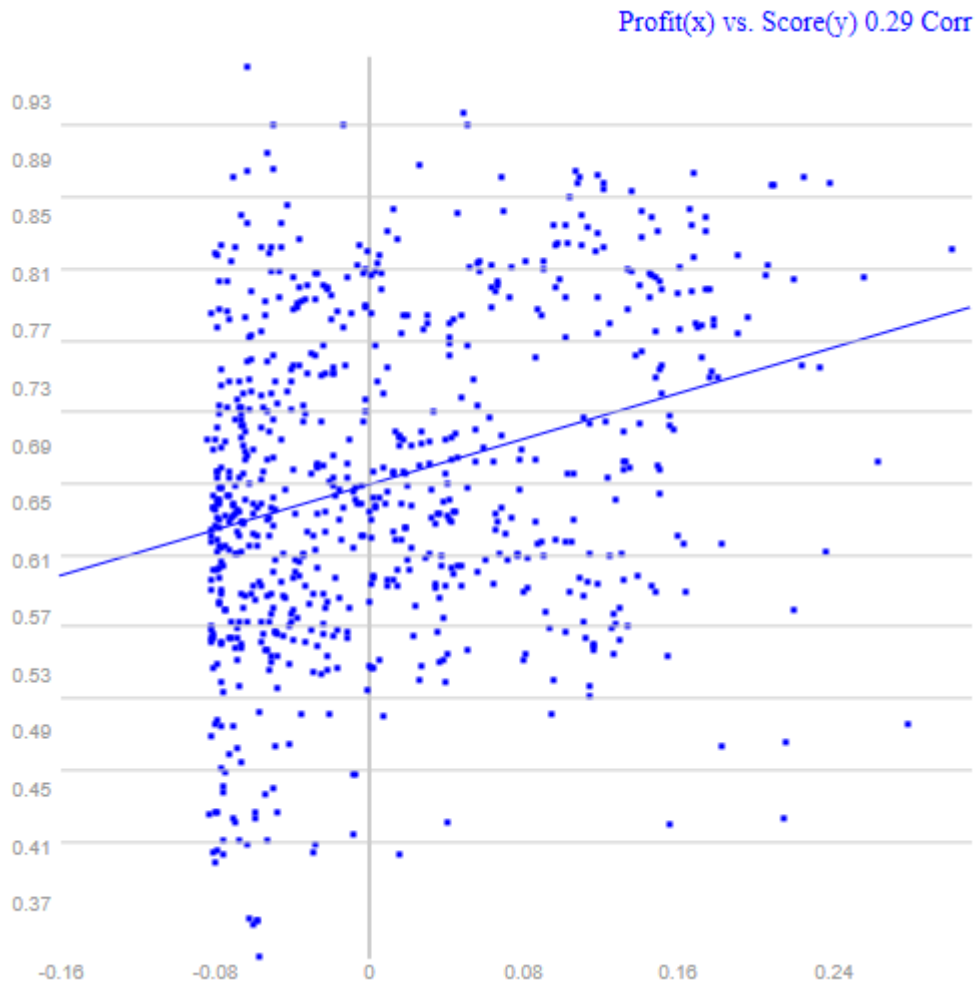
Profit(x) vs. Score(y) 0.29 Corr

With this genetic algorithm generation summary.

Generation	Individuals	Trades	Best	Seconds	Indiv/Sec
1	2,500	0	0.270	41.222s	60.6

2	2,500	0	0.275	44.610s	56.0
3	2,500	0	0.278	52.382s	47.7
4	2,500	0	0.290	54.203s	46.1
5	2,500	0	0.291	59.896s	41.7
6	2,500	0	0.301	58.757s	42.5
7	2,500	0	0.315	63.346s	39.5
8	2,500	0	0.315	64.860s	38.5
9	2,500	0	0.315	61.981s	40.3
10	2,500	0	0.315	66.354s	37.7
11	2,500	0	0.315	66.293s	37.7
12	2,500	0	0.320	62.915s	39.7
13	2,500	0	0.321	64.599s	38.7
14	2,500	0	0.321	60.901s	41.1
15	2,500	0	0.323	62.944s	39.7
16	2,500	0	0.326	63.479s	39.4
17	2,500	0	0.326	61.272s	40.8
18	2,500	0	0.328	65.334s	38.3
19	2,500	0	0.328	67.148s	37.2
20	2,500	0	0.328	66.049s	37.9
21	2,500	0	0.328	70.978s	35.2
22	2,500	0	0.328	74.250s	33.7
23	2,500	0	0.328	77.878s	32.1
24	2,500	0	0.328	76.589s	32.6
25	2,500	0	0.328	81.384s	30.7
26	2,500	0	0.328	82.413s	30.3
27	2,500	0	0.329	82.798s	30.2
28	2,500	0	0.329	84.461s	29.6
29	2,500	0	0.329	81.525s	30.7
30	2,500	0	0.329	86.042s	29.1
	75,000				

The Bottom Line

So the bottom line is how well does all this fancy code do? Here are the forward tested, e.g. tests run after all the tuning has been finished.

This data was run after all the tuning from 10/21/16 to 12/09/16

This is the overall summary of all the filters by best filters first. The Up filter averages 5.89% per trade with 25 trades, in the two months, with a success rate of 75%.

Up	GrowthEMA	Growth	Up2	Aroon
5.89%	5.05%	4.69%	3.78%	3.71%
20 / 75%	18 / 56%	18 / 78%	34 / 74%	52 / 65%

Breakout	TurtleBreakout	NewHigh	AnnRet	NewHighLFHS
3.64%	3.33%	3.11%	3.04%	2.94%
18 / 78%	49 / 69%	9 / 67%	128 / 65%	22 / 82%

RSI	DivAri	RSI3010	ExpClo	RSI4010
2.73%	2.38%	2.25%	2.07%	1.98%
49 / 59%	16 / 56%	59 / 63%	26 / 62%	76 / 47%

Sharpe	MACD	Alpha
1.64%	-0.06%	-3.03%
49 / 69%	29 / 41%	22 / 41%

Alpha

PS: This is not the best filter, just the first one. So look at more than this one.

Alpha - Scan Summary

From/To	10/21/2016	12/09/2016
Picks	22	
Gainers	9	41%
Percent	Avg: -3.03%	Total: -66.66%
Profit	Avg: $-98.76	Total: $-2,172.70
Score	Volume of the last 10 days divided by the previous 8 days. + Close of the last 2 days divided by the previous 12 days. + + + + +	
Loss/Limit	Loss: 91.0%	Trail: 104.0% / 96.0%
Capture	Up: 13%	Down: 348%
Cutoff	64	

From/To shows when this data was run. This is a two month run to get a reasonable set of data. There 22 recommendations during this window of while 9 ended up with positive return or 41% of the time. The average return per trade was -3.03 (not very good for this filter). Asuming a $3000 purchase, we lost on average $98.76 on each trade.

Profit vs. Time
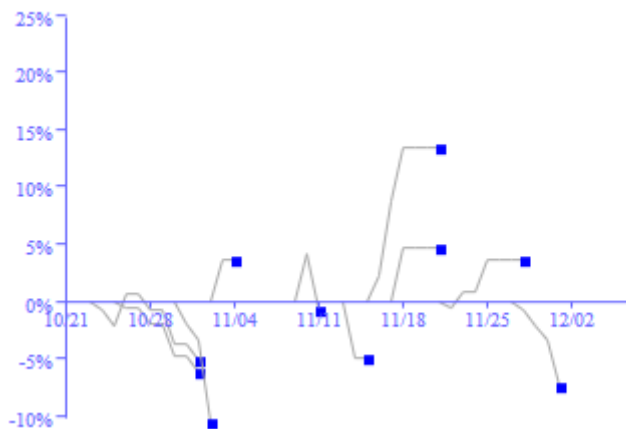
This chart shows the progression of some of the trades. All trades start out with zero profit. They then either gain or lose money from the buy price. As this filter averaged a loss, the bulk of these trades will finish down.

These are the actual trades:

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	54	HTM	10/21/16	10/24/16	$0.71	11/01/16	$0.66			4600	-7.20%	$8.95	-7.70%	1.98%		-7.93%	91%
2	51	HTM	10/24/16	10/25/16	$0.71	11/01/16	$0.66			4400	-7.20%	$8.95	-7.73%	1.98%		-7.93%	91%
3	50	HTM	10/25/16	10/26/16	$0.71	11/01/16	$0.66			4200	-8.24%	$8.95	-8.78%	0.84%		-8.96%	92%
4	51	HTM	10/26/16	10/28/16	$0.71	11/02/16	$0.65			4300	-8.74%	$8.95	-9.28%	0.28%		-12.43%	70%
5	52	HTM	10/28/16	10/31/16	$0.69	11/02/16	$0.65			4500	-6.90%	$8.95	-7.43%	2.31%		-10.66%	65%
6	49	HTM	10/31/16	11/01/16	$0.67	11/02/16	$0.63			4500	-6.84%	$8.95	-7.39%	2.37%		-8.01%	85%
7	56	HTM	11/02/16	11/03/16	$0.63	11/04/16	$0.63			5400	0.89%	$8.95	0.36%	5.10%	18%	-1.27%	
8	58	HTM	11/03/16	11/04/16	$0.65	11/08/16	$0.65			5400	0.12%	$8.95	-0.38%	4.29%	3%	-4.91%	
9	59	HTM	11/09/16	11/10/16	$3.90	11/11/16	$3.95			925	1.12%	$8.95	0.62%	8.92%	13%	-6.20%	
10	48	COWN	11/10/16	11/11/16	$3.21	11/15/16	$3.00			950	-6.45%	$8.95	-6.99%	2.80%		-6.54%	99%
11	47	COWN	11/11/16	11/14/16	$3.26	11/15/16	$3.00			925	-7.88%	$8.95	-8.43%	1.23%		-7.98%	99%
12	46	COWN	11/14/16	11/15/16	$3.12	11/21/16	$3.41			975	9.23%	$8.95	8.59%	15.38%	60%	-3.85%	
13	45	COWN	11/15/16	11/16/16	$3.13	11/21/16	$3.41			975	8.88%	$8.95	8.25%	15.02%	59%	-2.56%	
14	47	COWN	11/16/16	11/17/16	$3.24	11/21/16	$3.41			925	5.19%	$8.95	4.56%	11.11%	47%	-1.23%	
15	57	COWN	11/17/16	11/18/16	$3.39	11/21/16	$3.41			1100	0.53%	$8.95	0.05%	6.19%	9%	-2.65%	
16	61	COWN	11/18/16	11/21/16	$3.52	11/23/16	$3.55			1100	0.91%	$8.95	0.44%	5.11%	18%	-4.83%	
17	62	COWN	11/21/16	11/22/16	$3.62	11/28/16	$3.70			1100	2.10%	$8.95	1.64%	7.73%	27%	-1.93%	
18	62	COWN	11/22/16	11/23/16	$3.62	11/28/16	$3.70			1100	2.10%	$8.95	1.64%	7.73%	27%	-1.93%	
19	62	COWN	11/25/16	11/28/16	$3.78	12/01/16	$3.55			1000	-6.11%	$8.95	-6.55%	3.17%		-8.73%	70%
20	62	COWN	11/28/16	11/29/16	$3.77	12/01/16	$3.46			1000	-8.28%	$8.95	-8.71%	0.80%		-8.49%	98%
21	56	COWN	11/29/16	11/30/16	$3.76	12/01/16	$3.46			900	-8.03%	$8.95	-8.52%	1.06%		-8.24%	97%
22	38	COWN	12/02/16	12/06/16	$14.23	12/06/16	$13.60			225	-4.40%	$8.95	-4.93%	5.06%		-4.43%	99%
Totals											-2.51%		-3.03%		28%		88%

Annual Return

AnnRet - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	128		
Gainers	83		65%
Percent	Avg: 3.04%		Total: 389.52%
Profit	Avg: $110.61		Total: $14,158.15
Score	Volume of the last 10 days divided by the previous 25 days. + + + +		
Loss/Limit	Loss: 93.0%		Trail: 107.0% / 93.0%
Capture	Up: 43%		Down: 140%
Cutoff	43		

Positive 3.04% per trade.

You can see that most of the trades are positive:
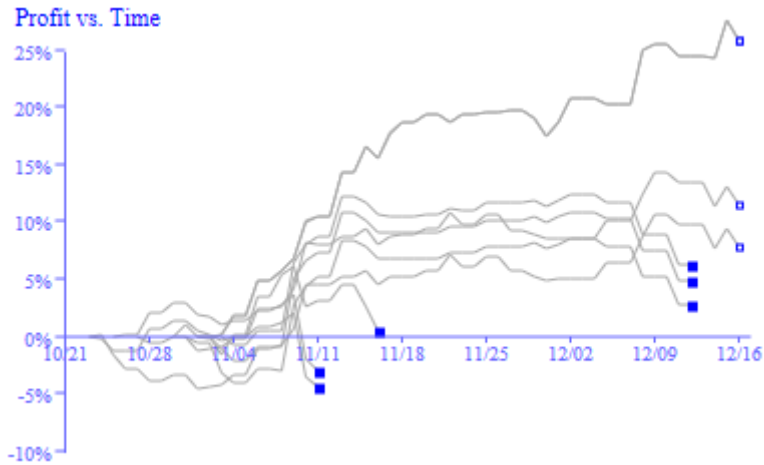
Some sample trades:

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	51	DPZ	10/21/16	10/24/16	$166.97	11/11/16	$159.50			20	-4.47%	$8.95	-4.98%	2.72%		-5.34%	84%
2	45	LUV	10/21/16	10/24/16	$42.46	10/26/16	$39.92			75	-5.96%	$8.95	-6.49%	1.12%		-13.06%	46%
3	67	SNA	10/21/16	10/24/16	$159.45			12/16/16	$171.98	30	7.86%	$8.95	7.46%	0.00%		0.00%	
4	67	SNA	10/24/16	10/25/16	$158.66			12/16/16	$171.98	30	8.40%	$8.95	7.99%	0.00%		0.00%	
5	51	DPZ	10/25/16	10/26/16	$164.56	11/11/16	$159.50			20	-3.07%	$8.95	-3.60%	4.22%		-3.95%	78%
6	64	SNA	10/25/16	10/26/16	$155.75			12/16/16	$171.98	25	10.42%	$8.95	9.92%	0.00%		0.00%	
7	59	SNA	10/26/16	10/28/16	$154.20			12/16/16	$171.98	25	11.53%	$8.95	11.01%	0.00%		0.00%	
8	50	LMT	10/28/16	10/31/16	$247.73	12/12/16	$250.86			15	1.26%	$8.95	0.78%	8.89%	14%	-4.65%	
9	43	LUV	10/28/16	10/31/16	$39.69			12/16/16	$49.93	80	25.81%	$8.95	25.11%	0.00%		0.00%	
10	54	EXR	10/31/16	11/01/16	$72.69	11/16/16	$71.17			45	-2.08%	$8.95	-2.61%	5.29%		-3.68%	57%
11	48	LMT	10/31/16	11/01/16	$246.60	12/12/16	$250.86			15	1.73%	$8.95	1.24%	9.38%	18%	-4.21%	
12	48	LUV	10/31/16	11/01/16	$39.85			12/16/16	$49.93	75	25.29%	$8.95	24.55%	0.00%		0.00%	
13	43	LUV	11/01/16	11/02/16	$39.68			12/16/16	$49.93	80	25.84%	$8.95	25.14%	0.00%		0.00%	
14	47	LMT	11/01/16	11/02/16	$245.49	12/12/16	$250.86			15	2.19%	$8.95	1.69%	9.88%	22%	-3.78%	
15	48	EXR	11/01/16	11/02/16	$71.61	11/16/16	$71.17			45	-0.61%	$8.95	-1.16%	6.87%		-2.23%	27%
16	46	EXR	11/02/16	11/03/16	$70.94	11/16/16	$71.17			45	0.33%	$8.95	-0.23%	7.89%	4%	-1.31%	
17	50	LMT	11/02/16	11/03/16	$241.46	12/12/16	$250.86			15	3.89%	$8.95	3.38%	11.71%	33%	-2.18%	
18	46	LUV	11/02/16	11/03/16	$39.76			12/16/16	$49.93	80	25.58%	$8.95	24.88%	0.00%		0.00%	
19	46	LMT	11/03/16	11/04/16	$238.32	12/12/16	$250.86			15	5.26%	$8.95	4.74%	13.18%	40%	-0.89%	
20	51	FLT	11/04/16	11/07/16	$150.57	11/11/16	$142.90			25	-5.09%	$8.95	-5.54%	2.05%		-5.82%	87%

Aroon

Aroon - Scan Summary

From/To	10/21/2016	12/09/2016
Picks	52	
Gainers	34	65%
Percent	Avg: 3.71%	Total: 193.00%
Profit	Avg: $148.80	Total: $7,737.81
Score	Volume of the last 2 days divided by the previous 6 days. + Close of the last 2 days divided by the previous 5 days. +++	
Loss/Limit	Loss: 93.0%	Trail: 107.0% / 93.0%
Capture	Up: 43%	Down: 67%
Cutoff	45	

This filter is pretty good with a positive 3.71% per trade. And remember, these trades only last a few weeks so the money can be turned around for more trades. Each trade produced an average of $148.80 and if every trade was done we would have made $7,737.81.

Actual trades:

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	54	HTM	10/21/16	10/24/16	$0.71	11/01/16	$0.66			4600	-7.20%	$8.95	-7.70%	1.98%		-7.93%	91%
2	51	HTM	10/24/16	10/25/16	$0.71	11/01/16	$0.66			4400	-7.20%	$8.95	-7.73%	1.98%		-7.93%	91%
3	50	HTM	10/25/16	10/26/16	$0.71	11/01/16	$0.66			4200	-8.24%	$8.95	-8.78%	0.84%		-8.96%	92%
4	51	HTM	10/26/16	10/28/16	$0.71	11/02/16	$0.65			4300	-8.74%	$8.95	-9.28%	0.28%		-12.43%	70%
5	52	HTM	10/28/16	10/31/16	$0.69	11/02/16	$0.65			4500	-6.90%	$8.95	-7.43%	2.31%		-10.66%	65%
6	49	HTM	10/31/16	11/01/16	$0.67	11/02/16	$0.63			4500	-6.84%	$8.95	-7.39%	2.37%		-8.01%	85%
7	56	HTM	11/02/16	11/03/16	$0.63	11/04/16	$0.63			5400	0.89%	$8.95	0.36%	5.10%	18%	-1.27%	
8	58	HTM	11/03/16	11/04/16	$0.65	11/08/16	$0.65			5400	0.12%	$8.95	-0.38%	4.29%	3%	-4.91%	
9	59	HTM	11/09/16	11/10/16	$3.90	11/11/16	$3.95			925	1.12%	$8.95	0.62%	8.92%	13%	-6.20%	
10	48	COWN	11/10/16	11/11/16	$3.21	11/15/16	$3.00			950	-6.45%	$8.95	-6.99%	2.80%		-6.54%	99%
11	47	COWN	11/11/16	11/14/16	$3.26	11/15/16	$3.00			925	-7.88%	$8.95	-8.43%	1.23%		-7.98%	99%
12	46	COWN	11/14/16	11/15/16	$3.12	11/21/16	$3.41			975	9.23%	$8.95	8.59%	15.38%	60%	-3.85%	
13	45	COWN	11/15/16	11/16/16	$3.13	11/21/16	$3.41			975	8.88%	$8.95	8.25%	15.02%	59%	-2.56%	
14	47	COWN	11/16/16	11/17/16	$3.24	11/21/16	$3.41			925	5.19%	$8.95	4.56%	11.11%	47%	-1.23%	
15	57	COWN	11/17/16	11/18/16	$3.39	11/21/16	$3.41			1100	0.53%	$8.95	0.05%	6.19%	9%	-2.65%	
16	61	COWN	11/18/16	11/21/16	$3.52	11/23/16	$3.55			1100	0.91%	$8.95	0.44%	5.11%	18%	-4.83%	
17	62	COWN	11/21/16	11/22/16	$3.62	11/28/16	$3.70			1100	2.10%	$8.95	1.64%	7.73%	27%	-1.93%	
18	62	COWN	11/22/16	11/23/16	$3.62	11/28/16	$3.70			1100	2.10%	$8.95	1.64%	7.73%	27%	-1.93%	
19	62	COWN	11/25/16	11/28/16	$3.78	12/01/16	$3.55			1000	-6.11%	$8.95	-6.55%	3.17%		-8.73%	70%
20	62	COWN	11/28/16	11/29/16	$3.77	12/01/16	$3.46			1000	-8.28%	$8.95	-8.71%	0.80%		-8.49%	98%
21	56	COWN	11/29/16	11/30/16	$3.76	12/01/16	$3.46			900	-8.03%	$8.95	-8.52%	1.06%		-8.24%	97%
22	38	COWN	12/02/16	12/06/16	$14.23	12/06/16	$13.60			225	-4.40%	$8.95	-4.93%	5.06%		-4.43%	99%
Totals											-2.51%		-3.03%		28%		88%

Breakout

Breakout - Scan Summary

From/To	10/21/2016	12/09/2016
Picks	18	
Gainers	14	78%
Percent	Avg: 3.64%	Total: 65.45%
Profit	Avg: $137.84	Total: $2,481.12
Score	Volume of the last 8 days divided by the previous 24 days. + Close of the last 2 days divided by the previous 14 days. + + +	
Loss/Limit	Loss: 90.0%	Trail: 104.0% / 96.0%
Capture	Up: 48%	Down: 29%
Cutoff	42	

Trade tracks:
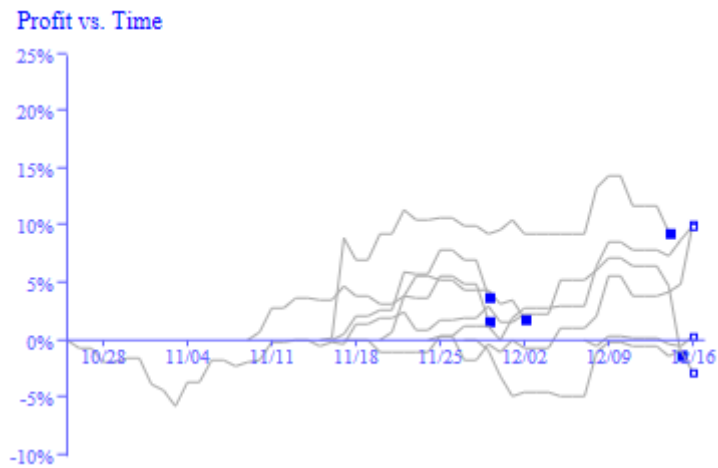
Sample trades:

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	40	ACRE	10/25/16	10/26/16	$13.34	12/15/16	$13.81			225	3.59%	$8.95	2.97%	7.90%	45%	-8.22%	
2	46	AXS	11/07/16	11/08/16	$58.69			12/16/16	$63.90	55	8.87%	$8.95	8.27%	0.00%		0.00%	
3	56	ALG	11/09/16	11/10/16	$70.96	12/02/16	$72.64			50	2.38%	$8.95	1.86%	6.64%	36%	-2.43%	
4	48	VSH	11/09/16	11/10/16	$14.78	11/18/16	$14.93			225	1.00%	$8.95	0.46%	5.21%	19%	-2.23%	
5	36	FLY	11/15/16	11/16/16	$12.62	12/14/16	$13.87			250	9.92%	$8.95	9.30%	14.50%	68%	-0.87%	
6	62	CVCY	11/16/16	11/17/16	$16.91	11/21/16	$17.64			225	4.31%	$8.95	3.82%	8.66%	50%	-1.81%	
7	43	STFC	11/16/16	11/17/16	$24.58	11/29/16	$25.59			130	4.12%	$8.95	3.54%	8.45%	49%	-2.65%	
8	82	SIFI	11/17/16	11/18/16	$14.17			12/16/16	$15.60	350	10.09%	$8.95	9.70%	0.00%		0.00%	
9	90	ESSA	11/17/16	11/18/16	$14.59	12/14/16	$16.12			375	10.46%	$8.95	10.10%	15.06%	69%	-0.77%	
10	54	HWKN	11/18/16	11/21/16	$46.04	12/14/16	$52.18			70	13.33%	$8.95	12.70%	18.05%	74%	-1.82%	
11	43	STFC	11/18/16	11/21/16	$25.08	11/29/16	$25.59			120	2.06%	$8.95	1.45%	6.31%	33%	-0.67%	
12	60	AB	11/22/16	11/23/16	$23.44			12/16/16	$22.40	160	-4.44%	$8.95	-4.89%	0.00%		0.00%	
13	48	PRA	11/23/16	11/25/16	$56.06			12/16/16	$61.65	55	9.97%	$8.95	9.34%	0.00%		0.00%	
14	45	SCHM	11/23/16	11/25/16	$45.10			12/16/16	$45.64	70	1.19%	$8.95	0.62%	0.00%		0.00%	
15	48	LANC	11/25/16	11/28/16	$140.14			12/16/16	$136.17	25	-2.83%	$8.95	-3.33%	0.00%		0.00%	
16	48	ALE	11/28/16	11/29/16	$63.76	12/15/16	$64.24			50	0.75%	$8.95	0.19%	4.95%	15%	-4.38%	
17	30	VTA	12/06/16	12/08/16	$12.08			12/16/16	$12.10	250	0.18%	$8.95	-0.41%	0.00%		0.00%	
18	29	FRA	12/09/16	12/12/16	$14.24			12/16/16	$14.28	225	0.31%	$8.95	-0.25%	0.00%		0.00%	
Totals											4.18%		3.64%		46%		0%

Dividend Aristocrats

DivAri - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	16		
Gainers	9		56%
Percent	Avg: 2.38%		Total: 38.03%
Profit	Avg: $117.08		Total: $1,873.36
Score	Annual Return at 20%. + Dividend at 5%.		
Loss/Limit	Loss: 94.0%	Trail: 106.0% / 94.0%	
Capture	Up: 44%		Down: 125%
Cutoff	0		

Profit vs. Time
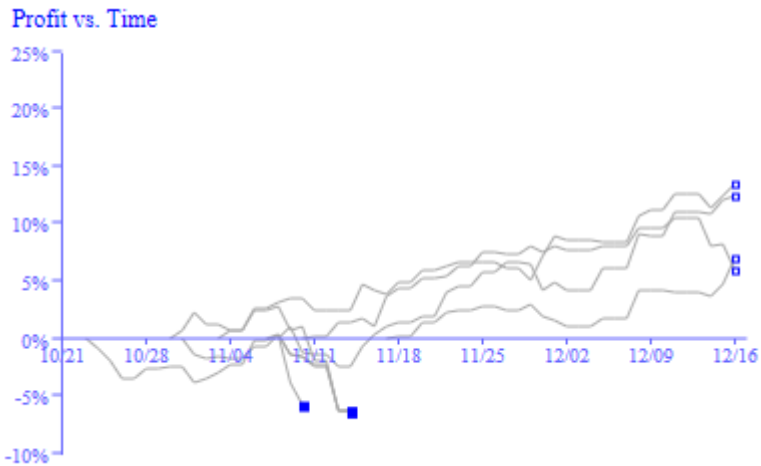
Close boxes mean an actual sell while open boxes mean we are still holding the stock.

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	69	MDT	10/21/16	10/24/16	$84.17	11/14/16	$79.98			50	-4.97%	$8.95	-5.38%	1.09%		-9.24%	54%
2	91	CVX	10/26/16	10/28/16	$101.90			12/16/16	$118.08	55	15.88%	$8.95	15.51%	0.00%		0.00%	
3	91	CVX	10/28/16	10/31/16	$104.15			12/16/16	$118.08	55	13.38%	$8.95	13.02%	0.00%		0.00%	
4	54	ED	10/28/16	10/31/16	$74.58	11/10/16	$71.47			45	-4.18%	$8.95	-4.68%	1.94%		-7.50%	56%
5	54	ED	10/31/16	11/01/16	$75.16	11/10/16	$71.08			45	-5.43%	$8.95	-5.93%	0.61%		-8.21%	66%
6	27	AFL	11/03/16	11/04/16	$68.87	12/02/16	$69.51			45	0.93%	$8.95	0.35%	7.37%	13%	-1.05%	
7	58	BDX	11/03/16	11/04/16	$173.87	11/14/16	$169.04			20	-2.78%	$8.95	-3.27%	3.43%		-6.57%	42%
8	27	MDT	11/04/16	11/07/16	$83.46	11/14/16	$79.98			40	-4.16%	$8.95	-4.67%	1.96%		-8.47%	49%
9	27	MDT	11/07/16	11/08/16	$84.10	11/14/16	$79.98			40	-4.89%	$8.95	-5.39%	1.18%		-9.17%	53%
10	36	MKC	11/08/16	11/09/16	$93.79	12/01/16	$89.16			35	-4.93%	$8.95	-5.45%	1.13%		-5.49%	90%
11	53	T	11/08/16	11/09/16	$37.08			12/16/16	$41.67	90	12.37%	$8.95	11.77%	0.00%		0.00%	
12	53	T	11/09/16	11/10/16	$37.26			12/16/16	$41.67	85	11.85%	$8.95	11.22%	0.00%		0.00%	
13	55	CINF	11/10/16	11/11/16	$71.42			12/16/16	$75.65	50	5.92%	$8.95	5.39%	0.00%		0.00%	
14	22	ADP	11/16/16	11/17/16	$93.41			12/16/16	$100.85	35	7.97%	$8.95	7.38%	0.00%		0.00%	
15	22	ADP	11/17/16	11/18/16	$94.37			12/16/16	$100.85	35	6.87%	$8.95	6.29%	0.00%		0.00%	
16	26	MMM	11/25/16	11/28/16	$173.30			12/16/16	$177.45	20	2.39%	$8.95	1.87%	0.00%		0.00%	
Totals											2.89%		2.38%		13%		59%

Exponential Close

ExpClo - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	26		
Gainers	16		62%
Percent	Avg: 2.07%		Total: 53.79%
Profit	Avg: $98.53		Total: $2,561.66
Score	Volume of the last 4 days divided by the previous 5 days. + Close of the last 3 days divided by the previous 13 days. + +		
Loss/Limit	Loss: 93.0%		Trail: 107.0% / 93.0%
Capture	Up: 32%		Down: 66%
Cutoff	60		
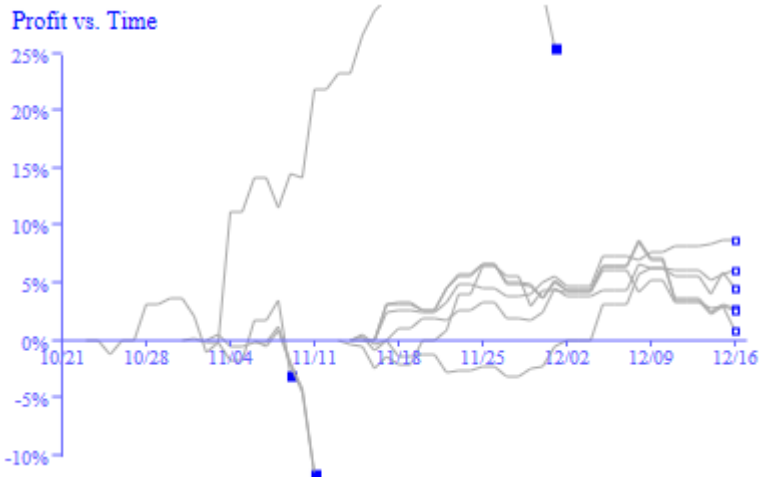
Profit vs. Time

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	56	BBVA	10/21/16	10/24/16	$6.96	11/09/16	$6.73			500	-3.31%	$8.95	-3.81%	3.96%		-5.66%	59%
2	61	BXMT	10/26/16	10/28/16	$29.96			12/16/16	$30.18	130	0.74%	$8.95	0.28%	0.00%		0.00%	
3	70	MSCC	10/31/16	11/01/16	$41.94	12/01/16	$52.76			100	25.80%	$8.95	25.26%	35.26%	73%	-1.91%	
4	67	R	10/31/16	11/01/16	$69.27	12/15/16	$79.44			60	14.68%	$8.95	14.19%	23.31%	63%	-1.09%	
5	58	ADM	11/02/16	11/03/16	$47.21	11/11/16	$44.53			75	-5.69%	$8.95	-6.16%	1.41%		-11.89%	48%
6	59	ADM	11/03/16	11/04/16	$47.28	11/11/16	$44.53			75	-5.82%	$8.95	-6.30%	1.26%		-12.02%	48%
7	60	ADM	11/04/16	11/07/16	$47.35	11/11/16	$44.53			80	-5.97%	$8.95	-6.41%	1.11%		-12.15%	49%
8	80	PRU	11/10/16	11/11/16	$96.34			12/16/16	$105.77	50	9.79%	$8.95	9.39%	0.00%		0.00%	
9	72	JJC	11/11/16	11/14/16	$29.09			12/16/16	$29.33	150	0.84%	$8.95	0.43%	0.00%		0.00%	
10	75	VMC	11/11/16	11/14/16	$134.56	11/23/16	$126.59			35	-5.92%	$8.95	-6.28%	1.16%		-6.10%	97%
11	74	UNP	11/14/16	11/15/16	$98.93			12/16/16	$103.31	45	4.43%	$8.95	4.01%	0.00%		0.00%	
12	73	SBNY	11/14/16	11/15/16	$147.87			12/16/16	$145.70	30	-1.47%	$8.95	-1.86%	0.00%		0.00%	
13	64	FSS	11/14/16	11/15/16	$15.24			12/16/16	$15.65	275	2.66%	$8.95	2.23%	0.00%		0.00%	
14	63	DGII	11/14/16	11/15/16	$13.47			12/16/16	$13.70	300	1.72%	$8.95	1.27%	0.00%		0.00%	
15	78	CME	11/14/16	11/15/16	$115.66			12/16/16	$122.66	45	6.06%	$8.95	5.69%	0.00%		0.00%	
16	64	FINL	11/15/16	11/16/16	$22.76	11/30/16	$22.44			170	-1.41%	$8.95	-1.86%	6.01%		-3.70%	38%
17	71	FSS	11/15/16	11/16/16	$15.26			12/16/16	$15.65	300	2.58%	$8.95	2.18%	0.00%		0.00%	
18	78	WAIR	11/15/16	11/16/16	$14.46			12/16/16	$15.25	325	5.46%	$8.95	5.06%	0.00%		0.00%	
19	78	BRO	11/16/16	11/17/16	$41.31			12/16/16	$44.88	120	8.64%	$8.95	8.25%	0.00%		0.00%	
20	74	DRI	11/16/16	11/17/16	$71.73			12/16/16	$75.53	65	5.30%	$8.95	4.90%	0.00%		0.00%	
21	63	EV	11/16/16	11/17/16	$40.21			12/16/16	$41.12	95	2.27%	$8.95	1.80%	0.00%		0.00%	
22	65	INN	11/16/16	11/17/16	$14.15			12/16/16	$15.47	275	9.34%	$8.95	8.84%	0.00%		0.00%	
23	71	NUAN	11/22/16	11/23/16	$16.76	12/01/16	$15.78			275	-5.86%	$8.95	-6.22%	1.23%		-6.23%	94%
24	61	APAM	11/23/16	11/25/16	$30.03			12/16/16	$29.65	130	-1.27%	$8.95	-1.72%	0.00%		0.00%	
25	61	MFA	11/23/16	11/25/16	$7.76			12/16/16	$7.71	475	-0.70%	$8.95	-1.18%	0.00%		0.00%	
26	64	APD	12/01/16	12/02/16	$144.21			12/16/16	$147.43	30	2.23%	$8.95	1.81%	0.00%		0.00%	
Totals											2.51%		2.07%		68%		62%

Growth

Growth - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	18		
Gainers	14		78%
Percent	Avg: 4.69%		Total: 84.49%
Profit	Avg: $154.33		Total: $2,777.89
Score	Close of the last 2 days divided by the previous 8 days. + + + +		
Loss/Limit	Loss: 91.0%		Trail: 104.0% / 96.0%
Capture	Up: 53%		Down: 19%
Cutoff	41		

Profit vs. Time
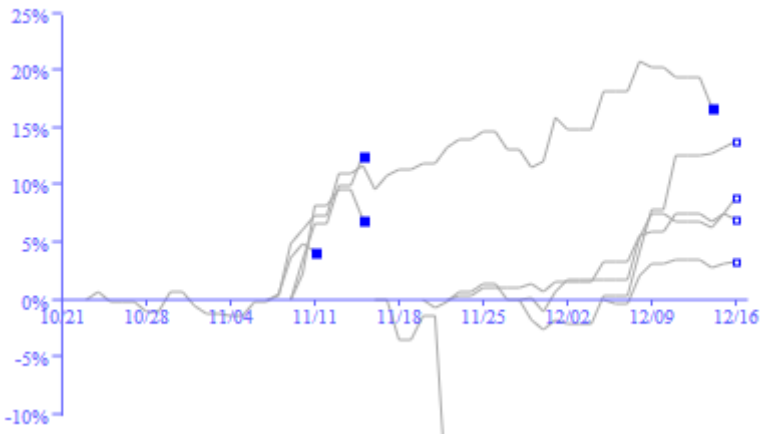
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	51	HOG	10/21/16	10/24/16	$56.71	11/11/16	$58.90			55	3.85%	$8.95	3.26%	8.18%	47%	-2.27%	
2	48	AXS	11/03/16	11/04/16	$58.03			12/16/16	$63.90	55	10.12%	$8.95	9.51%	0.00%		0.00%	
3	58	DRI	11/07/16	11/08/16	$65.41	12/14/16	$76.25			55	16.57%	$8.95	16.00%	21.43%	77%	-1.33%	
4	43	ZIXI	11/07/16	11/08/16	$4.37	11/15/16	$4.80			700	9.94%	$8.95	9.30%	14.52%	68%	-5.41%	
5	47	SBSI	11/09/16	11/10/16	$34.67	11/15/16	$37.35			90	7.75%	$8.95	7.13%	12.24%	63%	-2.68%	
6	48	SHOO	11/09/16	11/10/16	$38.24	11/15/16	$38.93			80	1.80%	$8.95	1.21%	6.04%	30%	-1.02%	
7	56	WABC	11/09/16	11/10/16	$53.52	11/15/16	$57.43			65	7.30%	$8.95	6.75%	12.67%	58%	-1.27%	
8	71	COL	11/11/16	11/14/16	$88.68			12/16/16	$93.21	50	5.10%	$8.95	4.68%	0.00%		0.00%	
9	54	PDCO	11/16/16	11/17/16	$48.24	11/22/16	$44.83			70	-7.08%	$8.95	-7.57%	2.11%		-24.43%	29%
10	42	BIF	11/17/16	11/18/16	$8.65			12/16/16	$9.05	350	4.62%	$8.95	4.01%	0.00%		0.00%	
11	42	LIOX	11/18/16	11/21/16	$5.16			12/16/16	$5.87	600	13.67%	$8.95	13.02%	0.00%		0.00%	
12	52	SON	11/21/16	11/22/16	$54.29			12/16/16	$53.96	60	-0.62%	$8.95	-1.16%	0.00%		0.00%	
13	51	WRB	11/22/16	11/23/16	$61.42			12/16/16	$65.71	50	6.98%	$8.95	6.36%	0.00%		0.00%	
14	52	SON	11/23/16	11/25/16	$54.52			12/16/16	$53.96	60	-1.03%	$8.95	-1.57%	0.00%		0.00%	
15	50	PRA	11/28/16	11/29/16	$56.66			12/16/16	$61.65	55	8.81%	$8.95	8.19%	0.00%		0.00%	
16	21	HSBC	12/01/16	12/02/16	$39.66			12/16/16	$41.36	80	4.28%	$8.95	3.70%	0.00%		0.00%	
17	28	RY	12/02/16	12/06/16	$66.52			12/16/16	$68.63	45	3.18%	$8.95	2.56%	0.00%		0.00%	
18	38	ALE	12/08/16	12/09/16	$64.61			12/16/16	$64.40	50	-0.33%	$8.95	-0.88%	0.00%		0.00%	
Totals											5.27%		4.69%		57%		29%

GrowthEMA

GrowthEMA - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	18		
Gainers	10		56%
Percent	Avg: 5.05%		Total: 90.94%
Profit	Avg: $168.00		Total: $3,024.01
Score	Volume of the last 10 days divided by the previous 28 days. + + + +		
Loss/Limit	Loss: 93.0%		Trail: 107.0% / 93.0%
Capture	Up: 37%		Down: 207%
Cutoff	44		

Profit vs. Time
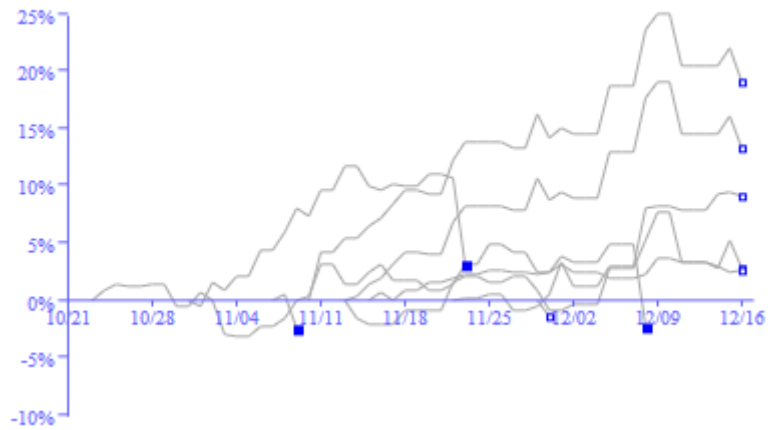
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	32	CODI	10/21/16	10/24/16	$18.40	12/08/16	$18.00			170	-2.20%	$8.95	-2.75%	5.16%		-3.80%	58%
2	19	HPQ	10/28/16	10/31/16	$14.20	11/23/16	$15.06			225	6.02%	$8.95	5.43%	14.00%	43%	-1.21%	
3	18	HPQ	10/31/16	11/01/16	$14.43	11/23/16	$15.06			225	4.33%	$8.95	3.76%	12.18%	36%	-2.16%	
4	32	KMX	11/04/16	11/07/16	$51.40	11/09/16	$47.99			60	-6.64%	$8.95	-7.18%	0.39%		-7.59%	87%
5	39	ULTI	11/07/16	11/08/16	$206.32	11/09/16	$200.14			15	-3.00%	$8.95	-3.56%	4.30%		-3.09%	97%
6	51	FFBC	11/09/16	11/10/16	$22.79			12/16/16	$27.95	140	22.64%	$8.95	21.96%	0.00%		0.00%	
7	56	FFBC	11/10/16	11/11/16	$23.48			12/16/16	$27.95	150	19.04%	$8.95	18.44%	0.00%		0.00%	
8	45	LOCO	11/10/16	11/11/16	$11.84			12/16/16	$13.20	275	11.49%	$8.95	10.88%	0.00%		0.00%	
9	51	TRST	11/11/16	11/14/16	$8.23			12/16/16	$8.45	375	2.67%	$8.95	2.08%	0.00%		0.00%	
10	61	FFBC	11/11/16	11/14/16	$24.68			12/16/16	$27.95	150	13.25%	$8.95	12.70%	0.00%		0.00%	
11	61	GFF	11/11/16	11/14/16	$20.18	11/17/16	$19.72			190	-2.30%	$8.95	-2.75%	6.29%		-6.10%	38%
12	52	NSR	11/14/16	11/15/16	$24.21			12/16/16	$33.20	130	37.13%	$8.95	36.36%	0.00%		0.00%	
13	25	VVR	11/15/16	11/16/16	$4.39			12/16/16	$4.50	700	2.60%	$8.95	2.00%	0.00%		0.00%	
14	28	GDDY	11/21/16	11/22/16	$36.11	12/01/16	$34.61			85	-4.17%	$8.95	-4.73%	3.04%		-7.43%	56%
15	34	GNTX	11/22/16	11/23/16	$18.41			12/16/16	$20.07	170	8.99%	$8.95	8.37%	0.00%		0.00%	
16	28	AINV	11/25/16	11/28/16	$6.19			12/16/16	$6.15	500	-0.61%	$8.95	-1.19%	0.00%		0.00%	
17	28	PPS	11/29/16	11/30/16	$66.05			11/30/16	$65.02	50	-1.57%	$8.95	-2.10%	0.00%		0.00%	
18	53	HUM	12/01/16	12/02/16	$216.11	12/06/16	$202.55			15	-6.27%	$8.95	-6.79%	0.78%		-6.46%	97%
Totals											5.63%		5.05%		39%		72%

MACD

MACD - Scan Summary

From/To	10/21/2016	12/09/2016	
Picks	29		
Gainers	12	41%	
Percent	Avg: -0.06%	Total: -1.87%	
Profit	Avg: $-5.25	Total: $-152.35	
Score			
Loss/Limit	Loss: 93.0%	Trail: 107.0% / 93.0%	
Capture	Up: 22%	Down: 252%	
Cutoff	55		

Profit vs. Time
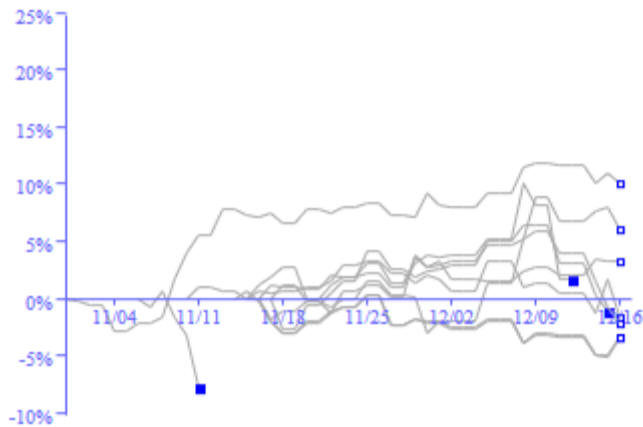
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	63	FLIR	10/31/16	11/01/16	$32.90			12/16/16	$36.22	120	10.09%	$8.95	9.59%	0.00%		0.00%	
2	62	FLIR	11/01/16	11/02/16	$32.76			12/16/16	$36.22	120	10.55%	$8.95	10.05%	0.00%		0.00%	
3	42	BG	11/04/16	11/07/16	$69.67	11/11/16	$65.59			45	-5.85%	$8.95	-6.39%	1.23%		-8.20%	71%
4	50	AXS	11/09/16	11/10/16	$60.28			12/16/16	$63.90	50	6.01%	$8.95	5.38%	0.00%		0.00%	
5	56	WAGE	11/10/16	11/11/16	$72.35			12/16/16	$71.15	50	-1.66%	$8.95	-2.14%	0.00%		0.00%	
6	55	MHLD	11/11/16	11/14/16	$16.12	11/28/16	$15.76			225	-2.21%	$8.95	-2.69%	5.15%		-3.85%	57%
7	80	AYI	11/14/16	11/15/16	$256.99			12/16/16	$248.16	20	-3.44%	$8.95	-3.77%	0.00%		0.00%	
8	72	SBGI	11/14/16	11/15/16	$31.06	12/12/16	$32.32			140	4.05%	$8.95	3.62%	11.88%	34%	-1.64%	
9	80	AYI	11/15/16	11/16/16	$256.70			12/16/16	$248.16	20	-3.33%	$8.95	-3.66%	0.00%		0.00%	
10	69	RAD	11/15/16	11/16/16	$7.55			12/16/16	$8.23	550	9.06%	$8.95	8.60%	0.00%		0.00%	
11	75	SBGI	11/15/16	11/16/16	$31.37	12/12/16	$32.32			150	3.02%	$8.95	2.63%	10.77%	28%	-1.66%	
12	57	WWD	11/15/16	11/16/16	$67.55			12/16/16	$69.47	55	2.84%	$8.95	2.35%	0.00%		0.00%	
13	75	SBGI	11/16/16	11/17/16	$31.92	12/12/16	$32.32			150	1.25%	$8.95	0.87%	8.87%	14%	-2.73%	
14	74	RAD	11/16/16	11/17/16	$7.76			12/16/16	$8.23	575	6.11%	$8.95	5.69%	0.00%		0.00%	
15	63	CMCSA	11/16/16	11/17/16	$67.66			12/16/16	$69.86	60	3.25%	$8.95	2.79%	0.00%		0.00%	
16	65	MIDD	11/16/16	11/17/16	$131.03	12/15/16	$133.55			30	1.92%	$8.95	1.46%	9.59%	20%	-1.14%	
17	63	MIDD	11/17/16	11/18/16	$133.77	12/15/16	$133.55			30	-0.16%	$8.95	-0.61%	7.35%		-2.76%	6%
18	73	NCS	11/17/16	11/18/16	$17.30	12/12/16	$16.83			275	-2.70%	$8.95	-3.06%	4.62%		-12.14%	22%
19	71	OC	11/17/16	11/18/16	$52.97			12/16/16	$51.84	85	-2.13%	$8.95	-2.52%	0.00%		0.00%	
20	75	SBGI	11/17/16	11/18/16	$32.26	12/12/16	$32.32			140	0.18%	$8.95	-0.22%	7.72%	2%	-3.75%	

New High

NewHigh - Scan Summary

From/To	10/21/2016	12/09/2016
Picks	9	
Gainers	6	67%
Percent	Avg: 3.11%	Total: 28.03%
Profit	Avg: $104.91	Total: $944.22
Score		
Loss/Limit	Loss: 93.0% Trail: 107.0% / 93.0%	
Capture	Up: 40%	Down: 194%
Cutoff	54	

Profit vs. Time
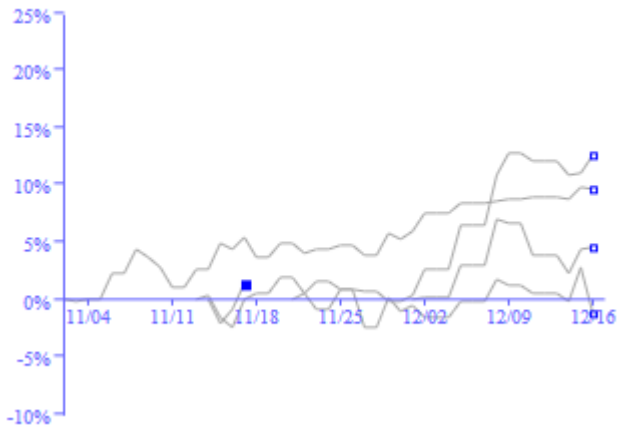
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	43	BIO	11/02/16	11/03/16	$164.98			12/16/16	$180.71	20	9.53%	$8.95	8.94%	0.00%		0.00%	
2	56	ABCB	11/09/16	11/10/16	$39.97	11/17/16	$40.83			85	2.13%	$8.95	1.60%	9.82%	22%	-1.06%	
3	59	ATSG	11/11/16	11/14/16	$16.38			12/16/16	$16.15	225	-1.38%	$8.95	-1.86%	0.00%		0.00%	
4	62	EBIX	11/11/16	11/14/16	$60.14	12/01/16	$58.59			65	-2.58%	$8.95	-3.02%	4.76%		-5.47%	47%
5	61	GFF	11/14/16	11/15/16	$20.59	11/17/16	$19.72			180	-4.24%	$8.95	-4.71%	4.18%		-7.97%	53%
6	47	MTSI	11/16/16	11/17/16	$44.64	12/01/16	$47.14			70	5.59%	$8.95	4.99%	13.95%	40%	-1.35%	
7	58	HTBK	11/21/16	11/22/16	$12.41			12/16/16	$13.96	300	12.47%	$8.95	11.93%	0.00%		0.00%	
8	54	SBCF	11/29/16	11/30/16	$20.13			12/16/16	$21.49	170	6.73%	$8.95	6.18%	0.00%		0.00%	
9	57	SBCF	12/01/16	12/02/16	$20.56			12/16/16	$21.49	170	4.50%	$8.95	3.97%	0.00%		0.00%	
Totals											3.64%		3.11%		31%		50%

RSI

RSI - Scan Summary

From/To	10/21/2016	12/09/2016
Picks	49	
Gainers	29	59%
Percent	Avg: 2.73%	Total: 133.75%
Profit	Avg: $98.72	Total: $4,837.36
Score	Volume of the last 10 days divided by the previous 30 days. + Close of the last 2 days divided by the previous 6 days. + + +	
Loss/Limit	Loss: 93.0%	Trail: 106.0% / 94.0%
Capture	Up: 37%	Down: 142%
Cutoff	43	

Profit vs. Time
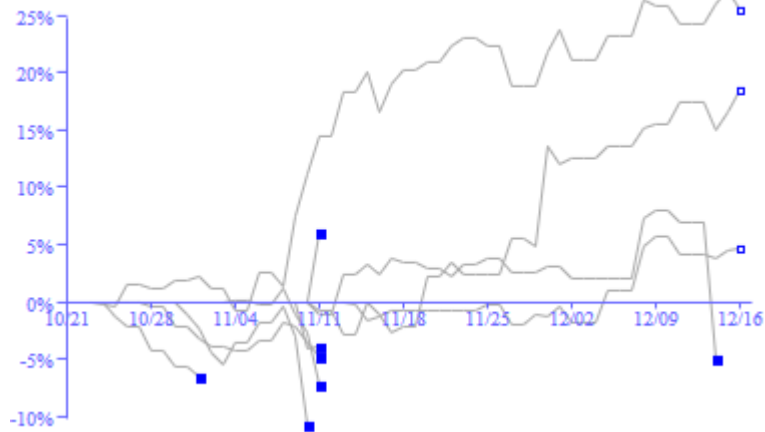
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	50	FITB	10/21/16	10/24/16	$21.37			12/16/16	$26.80	140	25.41%	$8.95	24.66%	0.00%		0.00%	
2	55	DPZ	10/24/16	10/25/16	$165.62	11/11/16	$159.50			20	-3.69%	$8.95	-4.21%	3.56%		-4.56%	81%
3	58	MTG	10/24/16	10/25/16	$8.65	11/01/16	$8.14			425	-5.88%	$8.95	-6.34%	1.20%		-8.05%	73%
4	45	RDN	10/24/16	10/25/16	$14.57	10/31/16	$13.63			225	-6.45%	$8.95	-6.96%	0.59%		-7.64%	84%
5	36	FTF	10/25/16	10/26/16	$12.33	11/11/16	$11.54			250	-6.40%	$8.95	-6.94%	0.65%		-6.65%	96%
6	18	PPR	10/26/16	10/28/16	$5.30			12/16/16	$5.52	575	4.11%	$8.95	3.50%	0.00%		0.00%	
7	33	ELLI	10/28/16	10/31/16	$107.08	11/10/16	$100.68			30	-5.97%	$8.95	-6.49%	1.11%		-12.81%	47%
8	41	BRCD	11/01/16	11/02/16	$12.27			12/16/16	$12.46	250	1.57%	$8.95	0.98%	0.00%		0.00%	
9	53	BG	11/03/16	11/04/16	$69.29	11/11/16	$65.59			50	-5.34%	$8.95	-5.83%	1.78%		-7.70%	69%
10	57	ORBK	11/09/16	11/10/16	$30.78	11/11/16	$29.37			120	-4.57%	$8.95	-5.03%	2.61%		-5.06%	90%
11	49	RLH	11/09/16	11/10/16	$8.92	11/30/16	$8.74			350	-2.00%	$8.95	-2.55%	5.38%		-2.47%	81%
12	46	MSM	11/09/16	11/10/16	$81.03			12/16/16	$92.24	40	13.84%	$8.95	13.21%	0.00%		0.00%	
13	52	GWR	11/10/16	11/11/16	$74.14	12/14/16	$75.89			45	2.36%	$8.95	1.81%	8.89%	26%	-5.10%	
14	51	LECO	11/10/16	11/11/16	$74.56	11/21/16	$72.61			45	-2.61%	$8.95	-3.13%	4.72%		-3.95%	66%
15	56	MEOH	11/10/16	11/11/16	$38.77			12/16/16	$45.95	90	18.52%	$8.95	17.91%	0.00%		0.00%	
16	51	SFNC	11/10/16	11/11/16	$54.53	11/15/16	$56.40			60	3.43%	$8.95	2.87%	10.03%	34%	-1.71%	
17	55	STL	11/10/16	11/11/16	$20.33	11/11/16	$20.13			170	-0.96%	$8.95	-1.47%	6.49%		-2.36%	41%
18	62	AAON	11/11/16	11/14/16	$32.42			12/16/16	$32.70	120	0.86%	$8.95	0.40%	0.00%		0.00%	
19	57	CBF	11/11/16	11/14/16	$36.26			12/16/16	$37.95	95	4.66%	$8.95	4.12%	0.00%		0.00%	
20	62	HUM	11/11/16	11/14/16	$195.10	12/06/16	$204.73			20	4.94%	$8.95	4.46%	11.64%	42%	-1.08%	

Sharpe Ratio

Sharpe - Scan Summary

|		
From/To	10/21/2016	12/09/2016
Picks	49	
Gainers	34	69%
Percent	Avg: 1.64%	Total: 80.49%
Profit	Avg: $63.61	Total: $3,116.71
Score	Volume of the last 10 days divided by the previous 8 days. + Close of the last 2 days divided by the previous 6 days. + + + +	
Loss/Limit	Loss: 93.0%	Trail: 101.0% / 99.0%
Capture	Up: 44%	Down: 127%
Cutoff	59	

Profit vs. Time
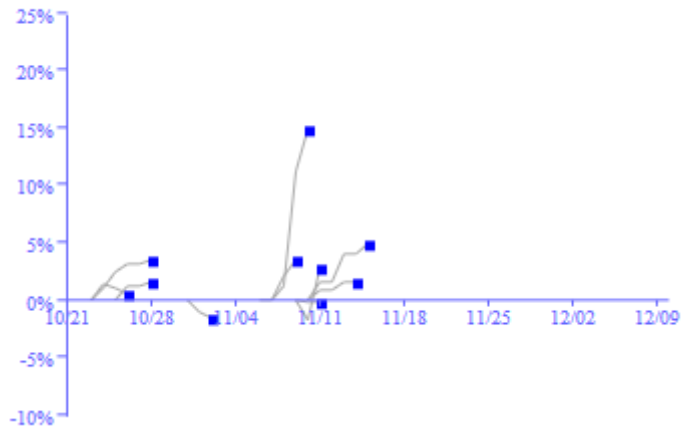
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	66	PFBC	10/21/16	10/24/16	$36.68	10/28/16	$37.61			110	2.53%	$8.95	2.08%	3.95%	64%	-1.07%	
2	62	RF	10/21/16	10/24/16	$10.70	10/31/16	$10.77			350	0.68%	$8.95	0.21%	1.70%	40%	-1.48%	
3	62	SHBI	10/21/16	10/24/16	$12.76	10/26/16	$12.92			300	1.23%	$8.95	0.76%	2.26%	55%	-0.96%	
4	60	LION	10/24/16	10/25/16	$18.94	10/31/16	$17.78			190	-6.13%	$8.95	-6.59%	0.94%		-6.13%	100%
5	76	PFBC	10/25/16	10/26/16	$37.34	10/28/16	$37.61			130	0.72%	$8.95	0.35%	2.11%	34%	-0.43%	
6	42	EXP	10/28/16	10/31/16	$81.00	11/03/16	$83.10			40	2.59%	$8.95	2.02%	3.62%	71%	-1.03%	
7	58	WSBF	10/31/16	11/01/16	$16.84	11/02/16	$16.88			225	0.23%	$8.95	-0.24%	1.25%	19%	-2.02%	
8	56	ULTI	11/01/16	11/02/16	$209.84	11/04/16	$209.83			20	0.00%	$8.95	-0.43%	1.30%		-4.03%	0%
9	67	VMC	11/04/16	11/07/16	$118.44	11/10/16	$135.43			35	14.35%	$8.95	13.85%	16.67%	86%	-0.64%	
10	66	SHBI	11/07/16	11/08/16	$13.06	11/09/16	$13.26			325	1.49%	$8.95	1.06%	4.81%	31%	-11.73%	
11	69	MCBC	11/07/16	11/08/16	$8.30	11/11/16	$9.02			500	8.64%	$8.95	8.17%	9.73%	89%	-0.75%	
12	56	UHAL	11/08/16	11/09/16	$324.04	11/10/16	$324.03			15	-0.01%	$8.95	-0.37%	1.00%		-5.01%	0%
13	61	CSV	11/09/16	11/10/16	$24.85	11/11/16	$25.20			150	1.39%	$8.95	0.91%	3.86%	36%	-2.41%	
14	73	MCBC	11/09/16	11/10/16	$8.65	11/11/16	$9.02			525	4.22%	$8.95	3.81%	5.27%	80%	-1.32%	
15	62	ORLY	11/09/16	11/10/16	$263.42	11/11/16	$263.78			15	0.14%	$8.95	-0.32%	1.15%	12%	-0.90%	
16	62	RDI	11/09/16	11/10/16	$13.54	11/11/16	$13.78			275	1.75%	$8.95	1.26%	4.84%	36%	-0.69%	
17	74	MCBC	11/10/16	11/11/16	$8.85	11/15/16	$9.15			500	3.32%	$8.95	2.90%	6.84%	48%	-2.08%	
18	61	NXST	11/10/16	11/11/16	$55.89	11/15/16	$60.09			70	7.52%	$8.95	7.03%	9.14%	82%	-1.59%	
19	65	RDI	11/10/16	11/11/16	$13.95	11/14/16	$14.06			300	0.76%	$8.95	0.33%	3.35%	23%	-1.30%	
20	71	SPNS	11/10/16	11/11/16	$14.53	11/14/16	$14.74			300	1.45%	$8.95	1.04%	2.48%	59%	-2.82%	

Turtle Breakout

TurtleBreakout - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	49		
Gainers	34		69%
Percent	Avg: 3.33%		Total: 163.11%
Profit	Avg: $128.41		Total: $6,291.86
Score	Close of the last 2 days divided by the previous 6 days. +++		
Loss/Limit	Loss: 90.0%		Trail: 104.0% / 96.0%
Capture	Up: 41%		Down: 100%
Cutoff	43		

Profit vs. Time
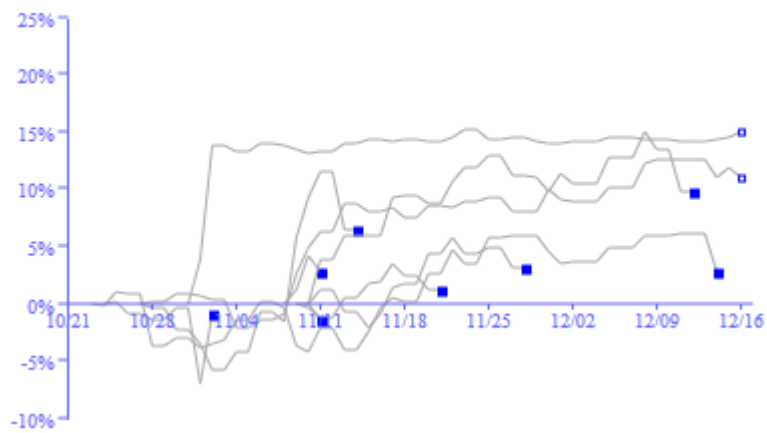
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	44	CLNY	10/21/16	10/24/16	$19.63	12/14/16	$20.20			160	2.91%	$8.95	2.32%	7.19%	40%	-6.41%	
2	52	LECO	10/21/16	10/24/16	$65.46	11/16/16	$74.96			50	14.51%	$8.95	13.88%	19.28%	75%	-3.01%	
3	51	FLWS	10/24/16	10/25/16	$9.58	11/02/16	$8.69			325	-9.29%	$8.95	-9.80%	3.30%		-15.90%	58%
4	32	JRO	10/25/16	10/26/16	$11.34			12/16/16	$12.04	275	6.15%	$8.95	5.55%	0.00%		0.00%	
5	68	FLIR	10/26/16	10/28/16	$32.66			12/16/16	$36.22	130	10.91%	$8.95	10.45%	0.00%		0.00%	
6	66	HBAN	10/26/16	10/28/16	$10.70	11/15/16	$11.71			375	9.44%	$8.95	8.95%	14.00%	67%	-5.91%	
7	53	VICR	10/26/16	10/28/16	$13.06	11/14/16	$14.21			250	8.79%	$8.95	8.20%	14.47%	61%	-6.20%	
8	70	DF	10/28/16	10/31/16	$18.35	11/10/16	$19.00			250	3.51%	$8.95	3.11%	7.99%	44%	-2.96%	
9	49	BRCD	10/31/16	11/01/16	$10.84			12/16/16	$12.46	300	14.94%	$8.95	14.32%	0.00%		0.00%	
10	24	TIF	11/07/16	11/08/16	$75.79	11/14/16	$78.61			40	3.72%	$8.95	3.11%	8.04%	46%	-2.33%	
11	46	MAR	11/08/16	11/09/16	$71.78			12/16/16	$86.05	45	19.87%	$8.95	19.21%	0.00%		0.00%	
12	48	EXP	11/08/16	11/09/16	$91.62	11/11/16	$93.17			35	1.69%	$8.95	1.13%	5.93%	29%	-2.97%	
13	83	CI	11/09/16	11/10/16	$135.47	11/21/16	$136.32			40	0.62%	$8.95	0.29%	4.82%	13%	-2.65%	
14	64	CNMD	11/09/16	11/10/16	$43.45	11/22/16	$45.07			90	3.73%	$8.95	3.26%	8.05%	46%	-2.40%	
15	72	EBIX	11/09/16	11/10/16	$59.33	11/28/16	$60.48			75	1.94%	$8.95	1.53%	6.19%	31%	-4.18%	
16	69	GFF	11/09/16	11/10/16	$17.98	11/16/16	$20.35			250	13.19%	$8.95	12.74%	17.91%	74%	-1.00%	
17	71	FSS	11/10/16	11/11/16	$14.39	12/12/16	$15.98			300	11.05%	$8.95	10.59%	15.67%	70%	-1.07%	
18	69	IBCP	11/10/16	11/11/16	$17.68	12/12/16	$20.21			250	14.30%	$8.95	13.84%	19.06%	75%	-1.13%	
19	72	MRTN	11/10/16	11/11/16	$22.19	11/11/16	$21.60			200	-2.66%	$8.95	-3.05%	8.16%		-5.59%	48%
20	72	RBA	11/10/16	11/11/16	$37.20	12/02/16	$37.32			120	0.33%	$8.95	-0.07%	4.51%	7%	-1.32%	

Up

Up - Scan Summary

|			
From/To	10/21/2016		12/09/2016
Picks	20		
Gainers	15		75%
Percent	Avg: 5.89%		Total: 117.70%
Profit	Avg: $204.08		Total: $4,081.55
Score	Volume of the last 10 days divided by the previous 5 days. + + + + +		
Loss/Limit	Loss: 93.0%		Trail: 106.0% / 94.0%
Capture	Up: 56%		Down: 18%
Cutoff	55		
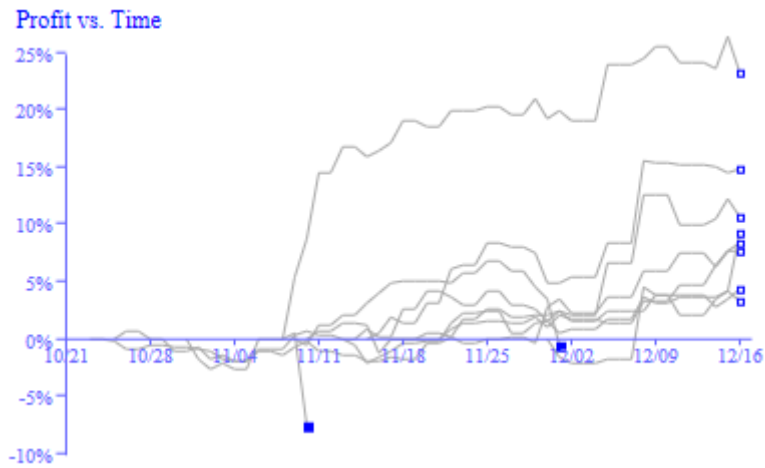
Profit vs. Time

	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	29	DOW	10/21/16	10/24/16	$54.26			12/16/16	$58.41	55	7.65%	$8.95	7.01%	0.00%		0.00%	
2	28	GSY	10/24/16	10/25/16	$50.19			12/16/16	$50.14	60	-0.11%	$8.95	-0.70%	0.00%		0.00%	
3	58	SGU	10/25/16	10/26/16	$9.61			12/16/16	$10.49	375	9.18%	$8.95	8.64%	0.00%		0.00%	
4	47	AFG	10/26/16	10/28/16	$74.59			12/16/16	$86.45	40	15.91%	$8.95	15.22%	0.00%		0.00%	
5	46	PFS	10/31/16	11/01/16	$22.62			12/16/16	$27.85	140	23.13%	$8.95	22.44%	0.00%		0.00%	
6	18	TFX	11/07/16	11/08/16	$145.38	12/01/16	$145.64			25	0.18%	$8.95	-0.31%	6.58%	3%	-3.07%	
7	50	HYPMY	11/08/16	11/09/16	$8.00	11/10/16	$7.53			375	-5.88%	$8.95	-6.44%	1.20%		-8.92%	66%
8	57	KLIC	11/09/16	11/10/16	$13.82	12/15/16	$15.87			250	14.83%	$8.95	14.24%	22.16%	67%	-1.94%	
9	63	TER	11/09/16	11/10/16	$23.56	12/01/16	$23.67			160	0.47%	$8.95	0.00%	6.89%	7%	-1.90%	
10	52	PGR	11/10/16	11/11/16	$32.98			12/16/16	$35.72	95	8.30%	$8.95	7.69%	0.00%		0.00%	
11	67	ACN	11/10/16	11/11/16	$119.47			12/16/16	$123.00	35	2.95%	$8.95	2.52%	0.00%		0.00%	
12	60	AFG	11/11/16	11/14/16	$80.55			12/16/16	$86.45	45	7.32%	$8.95	6.79%	0.00%		0.00%	
13	60	CHCO	11/11/16	11/14/16	$60.59			12/16/16	$66.98	60	10.55%	$8.95	10.00%	0.00%		0.00%	
14	56	VSH	11/14/16	11/15/16	$15.22			12/16/16	$15.85	225	4.14%	$8.95	3.60%	0.00%		0.00%	
15	70	WEN	11/15/16	11/16/16	$11.99			12/16/16	$13.75	350	14.72%	$8.95	14.23%	0.00%		0.00%	
16	20	DEI	11/17/16	11/18/16	$35.70			12/16/16	$36.52	85	2.29%	$8.95	1.69%	0.00%		0.00%	
17	27	JRO	11/17/16	11/18/16	$11.55			12/16/16	$12.04	275	4.21%	$8.95	3.62%	0.00%		0.00%	
18	60	NEWT	11/21/16	11/22/16	$15.55			12/16/16	$15.45	250	-0.63%	$8.95	-1.09%	0.00%		0.00%	
19	52	JNPR	11/30/16	12/01/16	$27.45			12/16/16	$28.33	120	3.22%	$8.95	2.66%	0.00%		0.00%	
20	61	ALK	12/01/16	12/02/16	$83.39			12/16/16	$88.73	45	6.41%	$8.95	5.90%	0.00%		0.00%	
Totals											6.44%		5.89%		26%		66%

Up2

Up2 - Scan Summary

From/To	10/21/2016		12/09/2016
Picks	34		
Gainers	25		74%
Percent	Avg: 3.78%		Total: 128.60%
Profit	Avg: $163.25		Total: $5,550.35
Score	Volume of the last 9 days divided by the previous 30 days. + + +		
Loss/Limit	Loss: 92.0%		Trail: 108.0% / 92.0%
Capture	Up: 54%		Down: 53%
Cutoff	66		

Profit vs. Time
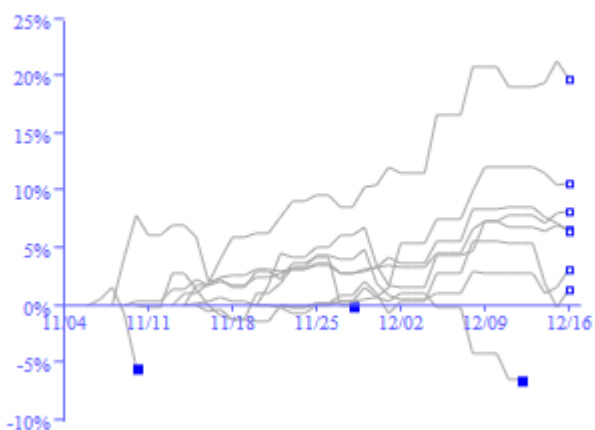
	Score	Symbol	Pick Date	Buy Date	Buy Price	Sell Date	Sell Price	Hold Date	Hold Price	Shares	Without	Comm	With	Max%	UpC	Min%	DnC
1	67	CRTO	11/04/16	11/07/16	$42.37	11/10/16	$40.61			95	-4.16%	$8.95	-4.59%	4.17%		-5.72%	73%
2	69	UCBI	11/07/16	11/08/16	$21.89			12/16/16	$28.82	190	31.66%	$8.95	31.09%	0.00%		0.00%	
3	81	MLM	11/08/16	11/09/16	$216.52	11/28/16	$217.50			25	0.45%	$8.95	0.12%	9.19%	5%	-1.33%	
4	84	MLM	11/09/16	11/10/16	$229.61	11/28/16	$217.50			25	-5.27%	$8.95	-5.57%	2.96%		-5.87%	90%
5	80	VLUE	11/09/16	11/10/16	$66.90			12/16/16	$71.31	75	6.59%	$8.95	6.21%	0.00%		0.00%	
6	84	ALL	11/10/16	11/11/16	$69.39			12/16/16	$74.11	75	6.80%	$8.95	6.44%	0.00%		0.00%	
7	73	BXP	11/10/16	11/11/16	$122.80			12/16/16	$124.34	40	1.25%	$8.95	0.88%	0.00%		0.00%	
8	69	FCF	11/10/16	11/11/16	$10.89			12/16/16	$13.68	400	25.57%	$8.95	25.06%	0.00%		0.00%	
9	70	FCF	11/11/16	11/14/16	$11.44			12/16/16	$13.68	375	19.60%	$8.95	19.10%	0.00%		0.00%	
10	84	ALL	11/14/16	11/15/16	$70.65			12/16/16	$74.11	75	4.90%	$8.95	4.54%	0.00%		0.00%	
11	80	CBOE	11/14/16	11/15/16	$68.46			12/16/16	$75.72	70	10.60%	$8.95	10.19%	0.00%		0.00%	
12	71	JPM	11/14/16	11/15/16	$78.58			12/16/16	$84.94	55	8.10%	$8.95	7.65%	0.00%		0.00%	
13	71	RGA	11/14/16	11/15/16	$118.30			12/16/16	$125.92	40	6.44%	$8.95	6.04%	0.00%		0.00%	
14	67	USB	11/14/16	11/15/16	$48.35			12/16/16	$51.74	85	7.00%	$8.95	6.54%	0.00%		0.00%	
15	78	SHW	11/15/16	11/16/16	$263.78			12/16/16	$271.76	20	3.02%	$8.95	2.68%	0.00%		0.00%	
16	53	NRF	11/16/16	11/17/16	$14.33			12/16/16	$15.13	225	5.61%	$8.95	5.03%	0.00%		0.00%	
17	88	DPS	11/18/16	11/21/16	$83.81			12/16/16	$90.65	65	8.16%	$8.95	7.80%	0.00%		0.00%	
18	74	MO	11/21/16	11/22/16	$64.08			12/16/16	$67.04	70	4.62%	$8.95	4.20%	0.00%		0.00%	
19	74	NOC	11/22/16	11/23/16	$248.29	12/12/16	$233.50			20	-5.96%	$8.95	-6.30%	2.22%		-11.11%	54%
20	66	VZ	11/22/16	11/23/16	$49.57			12/16/16	$52.27	80	5.45%	$8.95	4.97%	0.00%		0.00%	

Finding new algorithms

Finding filter algorithm is hard. Couldn't the computer just do this for itself? This is going to be the next big project. I am going to find the top profitable stocks with a given time frame (e.g. two weeks). Then I am going to run my Genetic Algorithm to try all the filters I have to see which ones with what parameters correlate the results. I expect there will be groups of algorithms that explain the different profits. I will use clustering to separate out the filters. Then each filters will be run against the whole database to see what it passes thru the filters. The problem here is just because a filter matches a given stock's profit, we need to see what else passes, like stocks that do not produce profit. Only filters that match high profit stocks and do not have a lot of low profits will be considered a good algorithm.

Appendix A - Available Data

	Good	NotTrading	LowVolume	LowPrice		
Indexes	617	48				
NYSE	2630	854	400	9		
AMEX	412	649	151	56		
OTCBB	95	1842	439	940		
NNN	2166	1025	387	299		
TSE	133	2028	32	16		
CDX	202	1821	60	17		
USMF					20954	
	6255	8267	1469	1337	20954	38282

I have a database of around 38000 entries which are a mix of indexes, equities and mutual funds. The data covers around 20 years of trades. All the research done for this book only uses the indexes and equities. The mutual funds are not used because they do not have open/close, high/low and volume data so many of the technical screens do not work. Besides, there is enough data with just the equities.

Right now, only actively trading equities, with a volume over 5000 shares traded per day and a price over $.50/Share are used.