



Strategy Wizard 5

With Special Enhancements for ARM6!



Welcome to my “white paper” on Strategy Wizard 5. I told my marketing guys that I don’t need a fancy brochure. Strategy Wizard 5 speaks for itself!

I can’t tell you how excited I am about this new version! Strategy Wizard 5 is making it possible to exercise the ENTIRE Genetic Algorithm in ANY Strategy, dramatically boosting performance.

What that means for YOU is more profits. And, since it’s 100% AUTOMATIC anyone can use it! Just open the “ARM6 Complete”

in Strategy Wizard 5 and Push the Run Button. About a day later – poof! A dramatically improved Strategy emerges.

Why EVERY Nirvana Club Member Needs Strategy Wizard 5

The Genetic Algorithm (GA) is an amazing Search Engine that finds profitable trading rules using the inputs fed to it. When properly set up, the GA can perform miracles. But there are so many “knobs” in the GA – knowing how to set them has always been somewhat of a mystery. Strategy Wizard 5 solves this problem.

With Strategy Wizard 5, you can automatically tune ANY GA-based Strategy to get better performance and higher profits out of it. But the really great thing about SW5 is that it is pre-configured to work on ARM6 GA Strategies right out of the box! Just run the basic ARM6 GA Complete automation on your Strategy. **It’s basically a robot that will get you the best possible A.I. Strategy to use for trading.** I think that’s worth its weight in gold!

Thanks for reading my White Paper. In the next sections I will endeavor to explain how Strategy Wizard 5 can help anyone using ARM6 to make more money in the market.

Now Tune ANY GA Strategy - Automatically.

Different Strategies perform differently, so it's a good idea to use optimal training values on any Strategy we want to use for trading. Running the new **ARM6 GA Complete Strategy Wizard** automation, you can literally **SET IT AND FORGET IT**. The automation will exercise every aspect of the GA and create a much better Strategy!

"Strategy Wizard 5 is a God-Send!"

In ONE RUN, Strategy Wizard 5 Does it All!

It Exercises the Fitness Functions.

Now you don't have to worry about whether to use "Hit Rate", "APR", or "Equity Curve" a GA. It tries all of them. AND, it tries different targets, like N Bar Exit, Strategy Exit and Pivot Point Exits. With the new Auto-Pair capability, it saves time by not running combinations that make no difference

It Adjusts the Training Settings.

These include things like Population Size, Mutation Rate, Minimum Genes, and so on. The result is a GA that has been fine-tuned to all the settings available, so it trains in the most efficient and profitable way possible. It's a god-send!

Adjust the Output Settings.

This is one of the most powerful aspects of the GA, enabling us to retrieve those Rules that will generate the best results, after training has completed. The **ARM6 GA Output** automation will try different values for Minimum PPT, Minimum Hit Rate, and determine which of the Filter Metrics (APR, Hits, etc.) to generate the best results.

Fitness

The screenshot shows the 'GA Signals' window with several key sections highlighted in red boxes:

- Fitness Function:** Set to 'Hit Rate'. Target is 'Nbars' with 'Number of Bars' set to 5. A checkbox for 'Perform Recency Weighting with Coefficient' is checked, with a value of 0.5. Another checkbox for 'Subtract a Penalty Equal to' is checked, with a value of 10% of Standard Deviation.
- Generate Rules for:** 'Longs' is selected. 'Train GA' is set to 'Dynamic' with a 'Quarterly' frequency. 'Lock trained dynamic periods' is checked. 'Data Collection Period' is set to 'Use backtest period' with '1000 bars prior to 5/4/2016'.
- Minimum Requirements:** 'Automatic' is checked. 'Profit per Trade' is 1, 'Hit Rate' is 65, 'APR' is 0, 'Min Hits' is 10, 'Max Hits' is 1000, 'Uniqueness' is 50, and 'Min EC' is 0.
- Genetic Algorithm Settings:** 'Automatic' is checked. 'Allow Don't Care Genes' is checked. 'Number of Rules' is 100, 'Discretization Intervals' is 5, 'Population Size' is 1000, and 'Mutation Rate (%)' is 20. 'Combine Hits' is checked for 2 consecutive bars. 'Only Allow one Active Gene for each Frequency Domain' and 'Enable Internal Validation' are checked.
- Convergence Settings:** 'Stop Manually' is selected. 'Stop After' is 6000 iterations, and 'Reinitialize population' is 50 iterations.

A table of 18 genes is visible, including TRII(60,30) > 80, RelMom(31,'SPY') > 0, and EMA(21)>EMA(55).

Training

The screenshot shows the 'Genetic Algorithm' window with several key sections highlighted in red boxes:

- Generate Signals for:** 'All Symbols' is selected.
- Target Accuracy:** 'High' is selected.
- Knowledge Base Lookup:** 'Minimum Requirements' are set to 'Advanced'. 'Profit per Trade' is 70, 'Hit Rate' is 182.99, 'APR' is 182.99, 'Hits' is 0, 'Max Std. Deviation' is 0, and 'Min Uniqueness' is 0. 'Signals / Bar / 1000 Symbols' are: Long Signals (403), Number of rules (100), Short Signals (0), Number of signals (0). 'Automatic Adjustment' is checked, 'Metric' is 'APR', and 'Signal Frequency' is 100.
- GA Information:** 'A Genetic Algorithm for Longs was run on 4/12/2020 6:30:43 PM. Number of iterations: 6000. Final fitness: 72.86008 %. Total number of rules found: 4701. Timeframe: DAILY. Date Collection Date Range: 12/29/2006 8:30:00 AM to 12/29/2017 8:30:00 AM. Number of Symbols: 30.'
- Fitness Results Graph:** A line graph showing 'Hit Rate' on the y-axis (0.00% to 80.00%) and 'Iterations' on the x-axis (0 to 6000). The hit rate starts at 0% and rises to approximately 70% by 6000 iterations.

Output

ARM6 GA Complete:

GA Signals1\NumRules: 100 -->500 (100)
GA Signals1\PopulationSize: 1000 -->3000 (500)
GA Signals1\ValidationPeriodsNumBars: 5 -->20 (5)

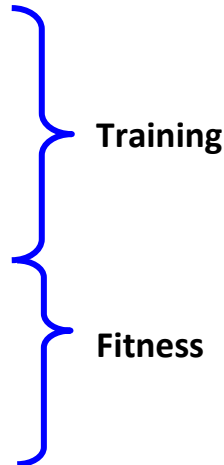
GA Signals1\MutationRate: 40 -->80 (10)

GA Signals1\MinGenes: 4 -->10 (2)

GA Signals1\Discretization: 5 -->13 (2)

GA Signals1\Target Calculation: (0,1,2,4,7)
GA Signals1\Target: 0 -->1 (1)
GA Signals1\Target Number of Bars: 1 -->9 (2)
GA Signals1\Target NPP Term: (0,1)

GA Signals1\Weighting: Checked / Unchecked
GA Signals1\Weighting Coefficient: 0.3 -->0.9 (0.2)



This is what the ARM6 GA Complete Strategy Wizard file looks like.

It's pre-defined. Just load the automation and push RUN!

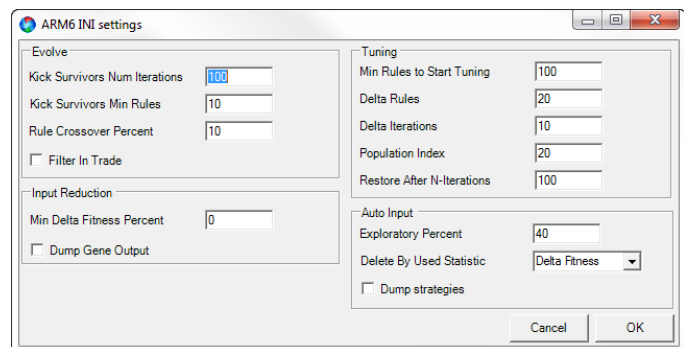
Now it's easy to tune any GA-based Strategy!

This is literally all you do to get an amazing new Strategy.

1. Select the **ARM6 GA Complete** Strategy Wizard automation.
2. Select the ARM6 Strategy you want it to work on.
3. Push **RUN**.
4. Take the day off. When it finishes, Strategy Wizard will email you.
5. Push **Create Strategy** and give it a new name.

You can ALSO Tune the GA Global Settings.

These settings (which are not Strategy Specific) determine how the GA searches for rules. Definite performance gains can be made when you turn Strategy Wizard loose on this area of the program. A special Strategy Wizard automation is included called **ARM6 GA Settings** that does this job, so you don't have to create it.



Save Time with Batch Search!

To exercise all parameters in the GA that can affect each other, the only option we had in Strategy Wizard 4 was **Fast Search**. This method uses a genetic algorithm to try different combinations. But since the search space has *millions* of potential combinations, you would have to let it run for weeks to get meaningful results.

The **Sequential Search** method only changes one Parameter at a time, and does not test for interactions between parameters, which is important when trying to find the best combination of dependent parameters, like “N-Bar Exit” and “Number of Bars.” Changing one and then changing the other (which is what happens in Sequential) is not the most robust way to do it.

The new **Batch Search** is a combination of Exhaustive and Sequential. The reason it’s so powerful is you can establish “batches” within the run so parameters that affect each other can be tried together. In the comparison below, Parameters that affect each other are grouped together into Batches, which are run Sequentially. This gives almost the same benefit as an Exhaustive Strategy Wizard run, but it’s only 246 iterations vs. 192 MILLION.

Strategy Wizard 4 - “Exhaustive”

```
GA Signals1\NumRules: 100 -->500 (100)
GA Signals1\PopulationSize: 1000 -->3000 (500)
GA Signals1\ValidationPeriodsNumBars: 5 -->20 (5)
GA Signals1\MutationRate: 40 -->80 (10)
GA Signals1\MinGenes: 4 -->10 (2)
GA Signals1\Discretization: 5 -->13 (2)
GA Signals1\Target Calculation: (0,1,2,4,7)
GA Signals1\Target: 0 -->1 (1)
GA Signals1\Target Number of Bars: 1 -->9 (2)
GA Signals1\Target NPP Term: (0,1)
GA Signals1\Weighting: Checked / Unchecked
GA Signals1\Weighting Coefficient: 0.3 -->0.9 (0.2)
GA Signals1\FilterAutoAdjust: Checked
GA Signals1\FilterDesiredSignals: 50
GA Signals1\FilterPPT: 0 -->3 (1)
GA Signals1\FilterMetric: (0,1,2,3,4,9)
```

192 MILLION Iterations

Strategy Wizard 5 – “Batch”

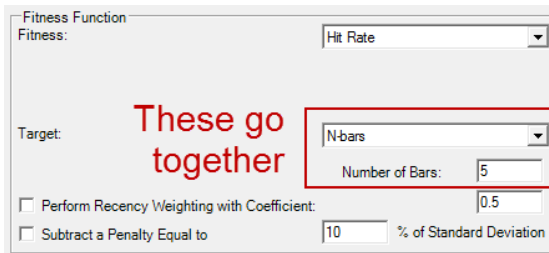
```
GA Signals1\NumRules: 100 -->500 (100)
GA Signals1\PopulationSize: 1000 -->3000 (500)
GA Signals1\ValidationPeriodsNumBars: 5 -->20 (5)
-----
GA Signals1\MutationRate: 40 -->80 (10)
-----
GA Signals1\MinGenes: 4 -->10 (2)
-----
GA Signals1\Discretization: 5 -->13 (2)
-----
GA Signals1\Target Calculation: (0,1,2,4,7)
GA Signals1\Target: 0 -->1 (1)
GA Signals1\Target Number of Bars: 1 -->9 (2)
GA Signals1\Target NPP Term: (0,1)
-----
GA Signals1\Weighting: Checked / Unchecked
GA Signals1\Weighting Coefficient: 0.3 -->0.9 (0.2)
-----
GA Signals1\FilterAutoAdjust: Checked
GA Signals1\FilterDesiredSignals: 50
GA Signals1\FilterPPT: 0 -->3 (1)
GA Signals1\FilterMetric: (0,1,2,3,4,9)
```

100
5
4
5
144
8
24
290

290 Iterations

Saving Even MORE Time as a result of Auto-Pairing

Thanks to “Auto-Pairing”, if you run multiple related parameters Strategy Wizard 5 is smart enough to avoid runs that are essentially “duplicates” Here’s how it works: The Fitness Function Target “N Bar Exit” should be paired with “Number of Bars”. Strategy Wizard 5 can focus on that “sub-problem” to find the best answer and compare it to other pairs, like pairing “Next Pivot Exit” with “Short, Medium, Long Term Pivots”.



The speed advantage comes from avoiding duplicate runs. There is no reason for “Number of Bars” to be altered while varying “Pivot Points” because those parameters have no relationship to each other. Depending on whether “Next Pivot Exit” or “N-Bar Exit” is selected determines which of these should be adjusted.

The new Strategy Wizard 5 will avoid runs that do not matter, thus potentially saving hundreds or even thousands of un-needed runs!

Seeing Which Parameters Don't Matter

```

GA Signals1\NumRules: 100 -->500 (100)
GA Signals1\PopulationSize: 1000 -->3000 (500)
GA Signals1\ValidationPeriodsNumBars: 5 -->20 (5)
-----
GA Signals1\MutationRate: 40 -->80 (10)
-----
GA Signals1\MinGenes: 4 -->10 (2)
-----
GA Signals1\Discretization: 5 -->13 (2)
-----
GA Signals1\Target Calculation: (0,1,2,4,7)
GA Signals1\Target: 0 -->1 (1)
GA Signals1\Target Number of Bars: 1 -->9 (2)
GA Signals1\Target NPP Term: (0,1)
  
```

Iteration	Parameters	BT NT	BT HR
1	100, 1000, 5	2716	61.08248
119	100, 2500, 5, 70, 6, 9, 7, 0, 1, x	810	66.2963%
117	100, 2500, 5, 70, 6, 9, 2, 0, 1, x	457	68.05252
118	100, 2500, 5, 70, 6, 9, 4, 0, 1, x	587	66.78024
70	500, 2500, 15	244	73.36066
51	100, 1000, 15	334	73.05389
79	400, 1000, 20	384	76.82292
47	200, 3000, 10	194	76.80412
77	200, 1000, 20	287	75.60976
84	400, 1500, 20	350	77.42857
30	500, 1000, 10	180	78.33334
82	300, 1500, 20	322	79.25697

Example

In Iterations 117, 118 and 119, the last parameter (Target Next Pivot Term) does not matter because the prior parameter “N Bars” is being used. Any parameter that doesn't matter in a given run will show as an 'x' for “don't care” as shown in the output on the right. This de-clutters the results to only show you what actually matters in a given Strategy Wizard Run, while saving time by not trying different values for that parameter.

Increases Profits by 3x and more...

Seven TIMES the Profits

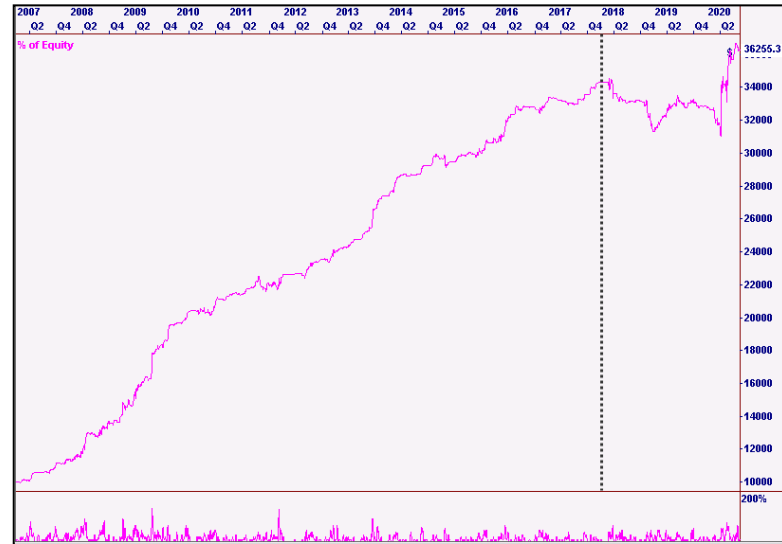
I applied Strategy Wizard 5 to a simple GA test case and was able to automatically improve Forward Test accuracy by 9 points and Forward Test Profit per Trade by 700%.

As I mentioned previously, the fact that the tuning process is 100% automatic is significant. Now ANY Club Member can take GA-Based Strategies and pump them through the Strategy Wizard Process to get new more profitable Strategies.

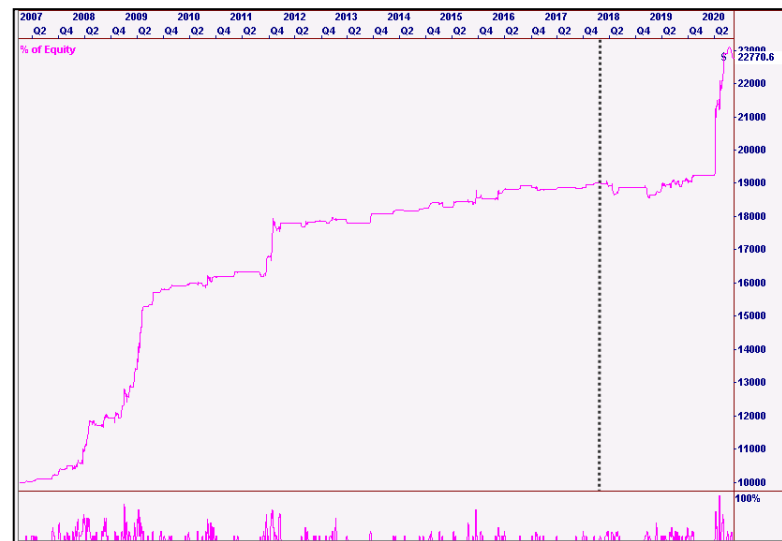
Not just for Club Members!

The same benefits inure to non-ARM Strategies. The speed improvement offered by the "Batch" Method is significant. I'm not doing ANY Strategy work without using Strategy Wizard 5!

GA Strategy Tune-up Example



ARM6 Strategy - Original



ARM6 Strategy 2 – Re-Trained after Strategy Wizard selected the best configuration options for the GA.

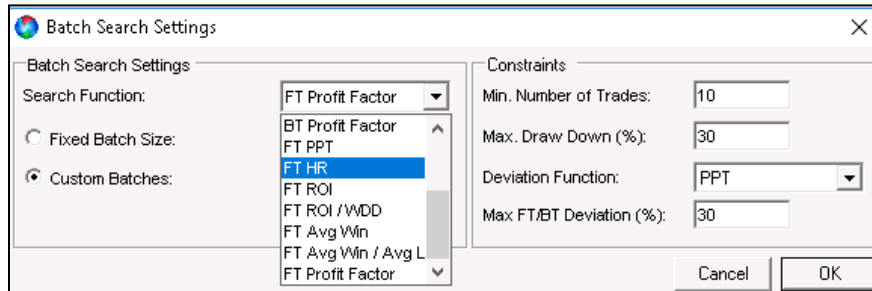
Strategy	Back Test						Forward Test					
	NT	PT	HR%	ANP%	PPT%	ABT	NT	PT	HR%	ANP%	PPT%	ABT
All Strategies	849	617	72.67	50.87	1.80	6	225	118	52.44	3.85	0.53	6
ARM6 SWTrain	765	553	72.29	42.30	1.66	6	196	102	52.04	1.97	0.31	6
ARM6 SWTrain2	274	207	75.55	21.99	2.41	6	84	52	61.90	7.08	2.27	6

Test Run showing that the re-trained Strategy AFTER tuning made 7 TIMES the Profit per Trade in the Forward Test! **And YES – That's 2.27% in 6 bars!**

Additional Enhancements

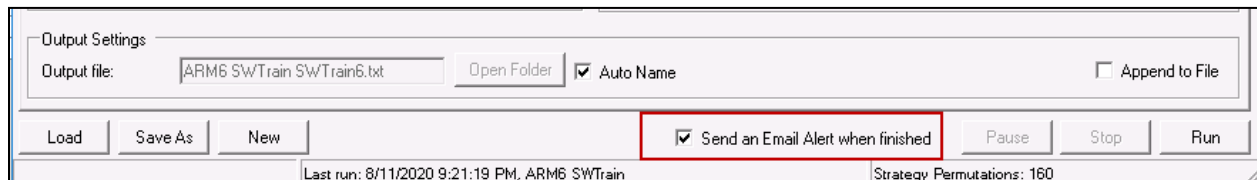
Targeting Forward Test Metrics

The new Strategy Wizard can target Forward Test metrics. This means that you actually end up with the benefit of two time periods – Back Test and Forward Test – not just Back Test. So the outcome of your runs is much more statistically significant.



Email Notifications

Strategy Wizard runs take a while, we added a new option whereby it can email you when a run completes. Also, if for any reason an error occurs in OmniTrader in the middle of a run, you will also be notified if you have this option activated.



Copy/Paste

Now, you can copy Strategy Wizard parameter definitions inside an SW automation or to another. Just select the parameters, use CTRL-C, and then CTRL-V in the new new place. This means, for those who are doing their own custom experiments with SW, you won't have to create the Parameter Definitions again. Just copy them.

Resume Run

Let's say your power dies. Or an error happens in Windows – anything that causes OmniTrader to abort. Strategy Wizard will keep its place as it goes along. All you do is re-load OmniTrader, activate Strategy Wizard and click RESUME.

Strategy Wizard 5 Summary

I hope you can see the tremendous benefits this software provides for your trading. Not only does it find really great parameters for the GA in general, it enables you to tune individual Strategies so they perform as well as they can.

I'm seeing huge improvements in my Strategies. Now, it's your turn!

"Worth its weight in Gold"

Improvement Summary

- 1) **ALL Parameters** of the ARM6 GA can be tuned by Strategy Wizard 5.
- 2) New BATCH Search Option – Dramatically Reduces the Number of iterations.
- 3) Target Forward Test Metrics for Better Training
- 4) Copy/Paste Parameters from one Strategy Wizard file to another
- 5) Parameter Auto-Pairing – Dramatically Reduces Runs on those Parameters.
- 6) Non-Paired Parameters (that aren't run) shown as 'x' in the output list.
- 7) Option to "Email Me when complete" (also emails errors if they occur).
- 8) Able to continue a Strategy Wizard run from any interruption.

Q&A

- 1) **Is SW5 really 100% automatic?** Absolutely. Open the **ARM6 GA Complete** file and run it on your GA-based Strategy. Then tell it to create a new Strategy from the best run.
- 2) **How robust are the Strategies created?** When we run ARM6 GA Complete, we aren't changing parameters inside a Strategy – we are changing the WAY the GA operates. Like, how it divides up the populations, or which Fitness Function it uses. So it is "once removed" from the problem. In other words, Strategy Wizard is determining how to make the ARM6 Genetic Algorithm the best A.I. tool it can be by letting it run many training exercises on HOW to create a new Strategy – not the Strategy itself. It can then run again on the Strategy to generate the best possible Knowledge Base of Trading Rules.
- 3) **What if something happens in the middle of a long run?** We have improved Strategy Wizard so it can recover and resume – no matter what happens in the software or on your computer.

Special Offers



A TREMENDOUS software development effort has gone into the creation of Strategy Wizard 5.

We appreciate your purchase of this advanced and powerful technology by our amazing Nirvana development team, which not only gives you the best possible Strategies, but supports our efforts.

Strategy Wizard 5 New Purchase \$1,495

Special Offer by the Deadline\$995

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