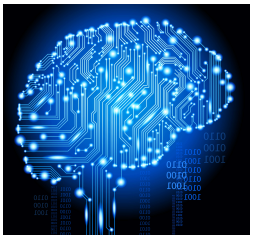
# Cooper Advanced Technologies



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## *NeuralScope(TM) - Version 18 Release 6, for TradeStation®(9.5/10+) with MetaTrader®(4) and NinjaTrader®(7/8) Multi-Broker API Interface:*

First of all, let us at C.A.T - NeuralScope(TM), thank you for considering NeuralScope(TM) as your trading strategy of choice. NeuralScope(TM) is currently available for TradeStation®(9.5/10+), with both the MetaTrader®4 and NinjaTrader®(7/8) Multi-Broker API interface, with automated trading fills, averaging nanoseconds. NeuralScope(TM) is a revolutionary, cutting edge development in Forecasting Science. NeuralScope(TM) is a Genetic Adaptive, General Regression, Neural Net, based on an advanced Genetic Algorithm, which offers cognizance and adaptability in its detection of patterns within the symbol spectrum. NeuralScope(TM) continues to grow in popularity and has been utilized in several countries around the world and is the system of choice for many traders.

Here is a brief understanding of how NeuralScope(TM) Neural Net is constructed.

The following is a brief understanding of how a
Neural Net pattern formation is created in NeuralScope(TM).

In the above image, the neural net is constructed of
Inputs = (Neurons) = **Y** x Hidden Layers = **X**
(With Hidden Layers equal to 2 x Square Root of the Inputs) = [2x√**Y**]= **X**
In the above example, although not fully illustrated
the same as in NeuralScope(TM), due to space constraints.

[Inputs = (Neurons) = (**2 x √5**) = Hidden Layers) = **4.47**)]
= [**5Y x 4.47X**] = 22.35!
= **22.35!** (Permutations)
= 1.124000727 E+21 or 1,124,000,727,000,000,000,000

With every **Input (Neuron)** Inter-connected to every **Hidden Layer** node
which in this case, equals **22.35** Factorial or
represented as **22.35!** which is equal to
1.124000727 E+21 or 1,124,000,727,000,000,000,000
connection nodes for this very small Net.

NeuralScope(TM) Inputs (Neurons), usually range between 50 and 100,
dependent upon the study, time scale and bar size being forecast.
So you can understand the enormous mathematical matrix that is
created and used as a pattern model.

A 50 input Neural Net would equate to 707! or 2.075762585 E+1709
and a 100 Input Neural Net would equate to 2000! or 3.316275092 E+5735 or roughly a 6000 digit number.

Why do we do this you may ask? To try and mimic the way the human brain works, however with more accurate and faster decision making and without any emotional constraints. When a baby is born, it is currently understood that they start development with approximately 100 Billion Neurons, which will grow exponentially by the time they are actually at 12 months and continue to grow exponentially into their late teens and early twenties or until they reach adulthood and their body has fully developed. And as far as we know now, they may even continue to grow throughout one's lifetime. We are only just beginning to be able to map the human brain and already we have found this to be a monumental task due to the brain's complexity and amount of Synaptic pathways and connected Neuron nodes. At 100 Billion Neurons that would be 2,000,000,000,000,000,000 Factorial or 2,000,000,000,000,000,000! Synaptic pathways. A very large number indeed! So, until Quantum Computing - (Logic Methodology) and Optical Processors, Circuitry, Memory, Storage and Networks - (Hardware), are commercially available, our present processing capabilities are very limited. NeuralScope(TM) is presently at the Advanced Narrow Artificial Intelligence (AI) level, however, when we can perform the additional calculations with the Quantum Computing and Optical Technology advancements listed above, it could become very near, Artificial General Intelligence (AGI) and may even eventually become, Artificial Super Intelligence (ASI) capable in time. NeuralScope(TM) offers multidimensional reasoning and calculated analysis.

So, how does NeuralScope(TM) work? Very simply put, just like the Human Brain does. Maybe "simply" is not the best word usage here, considering the above example, as NeuralScope's™, Artificial Intelligence, as well as the Human Brain are extremely more complex, than just " simply ". So how does NeuralScope(TM) work? When NeuralScope(TM) Neural Net has learned patterns from a specific historical spectrum of symbol data, it creates a model. It is then able to identify through very complex matrix mathematics, (see above), re-occurrences of events from patterns which are stored, just the same as the human brain stores memories. For example; let's say that you touch something that is very hot, the activity passes from the sensors in your fingers to the synapses of your brain in a fraction of a second via neural pathways and the event is also stored for future reference, while an immediate reaction is issued to pull your hand away from the impending danger. The next time you encounter this or a similar event the stored information is recalled and a warning from your brain is initiated, thus alerting you, when considering touching this item again. This is known as the learning and recollection process. The same works with a Neural Net. Multi Dimensional Patterns are learned which exist in the Symbol Spectrum very similar to Fractal Patterns. A Fractal is a Pattern within Chaos. Snowflakes, Leaves and many natural components around us offer a form of nature's Fractal Patterns. The symbol spectrum is very much the same and although there are infinite patterns and cyclic activity within a chaos spectrum, the spectrum itself is finite and we are able to identify and extract multi dimensional patterns that are meaningful enough, while ignoring noise on the spectrum base and identifying multi dimensional patterns, that are able to assist us in our decision making, thus reducing the error scientifically and systematically, remembering that the ability to remove the error totally is at the moment impossible. NeuralScope(TM) looks inside the spectrum at billions of permutations and millions of patterns in a split second, through complex neural nets and matrix mathematics and makes forecasts with an extraordinary high degree of confidence. Confidence is measured in Correlation Coefficient and $R^2$ values of prediction capabilities learned for actual future events. NeuralScope(TM) underlying matrix mathematics is extremely powerful, and offers correlation on, learning history verses prediction actual, with very high Correlation Coefficient and $R^2$ values. When certain criteria are met an order is initiated for you to submit your trade to the appropriate arena. The Exiting strategy performs additional observations. As market conditions change very rapidly, NeuralScope(TM) takes into account several blended incremental exit scenarios, concurrently. From Reverse Net Predictions to various Capture/Exit Stops! You may use your own approach here as well, remembering to keep the Ratio balance of 3:1, (3 Losses and 1 Win = $ 0.00 PnL), while not risking more than 1% of account net asset value, (NAV). Remember; **This is a Zero Sum Environment!** For somebody to profit, somebody has to lose! That is a fact! What NeuralScope(TM) is doing, is to; Scientifically Analysis, Enter and Exit the Market, as quickly as is feasible, based upon both NeuralScope(TM) parameters and your own. You may use a selection of both.

NeuralScope(TM) also offers a protective per trade Stop Loss to help in protecting you from an uncontrolled loss and assisting in Money Management. Or you my turn all NeuralScope(TM) Stops off and utilize TradeStation®(9.5/10+) Stops, and/or your own. NeuralScope(TM) is fully automated and can be set to trade directly without any human intervention within TradeStation®(9.5/10+) for Equities/Futures plus, both the MetaTrader®4 and NinjaTrader®(7/8) for the FOREX.

Additionally NeuralScope(TM) will allow you to plug in any developed spectrum patterns and prediction lengths, allowing you to have a broad usage in your trading efforts. Currently NeuralScope(TM) is being offered with a small range of Neural Nets, (FOREX EURUSD and GBPUSD), however, our Staff are always developing additional Neural Nets for other major symbols. As these Nets are developed they are made available to you without any further obligations for as long as you are a NeuralScope(TM) subscriber. Also a Net may even be created exclusively for your special requirements and custom symbol preference, parameters and usage. Please contact us for more information

on this. Additionally, with our added Neural Net Development Course and Software, you can create your own Neural Nets. Please contact us about the Neural Net Development Course and Software.

One of the most difficult challenges in trading is to achieve a correctly balanced Loss/Win Ration and so that you are not progressively digging yourself into a financial hole. This is why systematic trading is the best way, so you remove human emotional factors and maintain a consistent ratio and insure that your losses are not exceeding your wins overall. NeuralScope(TM) allows you to define and optimize, your mix of parameters consistent to your own trading style. Obtaining the correct balance, is the key to being a successful trader. NeuralScope(TM), allows you to extensively stress test your methodologies.

With NeuralScope(TM) you can also trade any one single Platform or any combination of the three Platforms, TradeStation®(9.5/10+), MetaTrader®4 or NinjaTrader®(7/8). As you are only able to interact with one occurrence of MetaTrader®(4) or NinjaTrader®(7/8) and TradeStation®(9.5/10+), you may also consider a Trade Copier from MetaTrader®(4) to MetaTrader®(4) and/or NinjaTrader®(7/8) to NinjaTrader®(7/8), for other Broker integration. In our testing and studies, we have simultaneously traded all three platforms, plus Trade Copied MetaTrader®(4) to an additional seven (7), MetaTrader®(4) Brokers, in a Real-Time capacity, with FX Blue trade copier, https://www.fxblue.com/appstore/2/mt4-personal-trade-copier. In which to do, you will require a fairly advanced computing platform.

Remember you will always have slippage, both caused by technology (Speed of Connection, Speed of Computer and Speed of Broker to Market. Here is an excellent website which is continually adding and reviewing MetaTrader®(4) FX Brokers and lists the top 100, https://www.100forexbrokers.com/mt4forexbrokers This is why a localized DTS or (Dedicated Trade Server), located on or near the exchange, for which you are trading, is highly recommended. A couple that we have had experience with and can recommend, is Beeks Financial Cloud at: https://www.beeksfinancialcloud.com/ and RapidSwitch at: https://www.rapidswitch.com/. Do not attempt to use a VPS, Virtual Private Server, as they do not usually have a dedicated Hard Drive, which is required for NeuralScope(TM) to operate correctly.

## ***Minimum System Requirements:***

***** Important Note: We do not recommend TradeStation 10 yet as it still has a few development issues!***

With Neural Nets due to the enormous mathematical processing involved, it is recommended that you operate the **fastest, most powerful computer possible**. NeuralScope(TM) will operate on any standard Windows PC, however it is recommended for it to be continuously the fastest possible PC for the best possible trading results. Although NeuralScope(TM) will operate on any Windows PC, the faster the better. Again this is true for your Internet connection speed. A solution to this and highly recommended, is to have a DTS or (Dedicated Trade Server), located on or near the exchange for which you are trading. These are radially available at a reasonable cost. A VPS, or Virtual Trade Server will not work as the applications perform a lot of disk swapping, thus requiring a Hard Drive. The best Hard Drives for this application is an SSD, Solid State Drive.

It is also assumed here, that you are familiar in the operations and navigation of a Windows platform and that of the TradeStation®(9.5/10+) Software.

## ***Installation and Operation Guidelines:***

This may seem a bit complicated, however when you have read all of the instructions and followed everything as is directed, it is as easy as we are able to make possible for you. You will need System Administrator rights and some knowledge in the TradeStation®(9.5/10+), NinjaTrader®(7/8) and MetaTrader®(4) platforms. There isn't really a lot to setting up to begin using NeuralScope(TM). You must run the NeuralScope(TM) Setup install program; this will automatically place the appropriate System Files and Nets to your system's directory and the Program into your TradeStation®(9.5/10+) platform. On your Desktop, you will find the NeuralScopev18r6 icon, this will open the data directory for NeuralScope installation. You can select the appropiate TradeStation®(9.5/10+) ELD program file, depending upon which of the TradeStation platforms you are using. Now in TradeStation®(9.5/10+), Open the pre-developed NeuralScope(TM) Desktops and Workspaces for assistance in getting started quickly. These will be located in your C:\Program Files (x86)\NeuralScopev18r6\ directory, under Desktops and Workspaces.

After which you are ready to start using the system immediately. You will only need to input your respective system parameters when you insert the strategy into a chart. See the **Strategy Inputs Section**, below. Remember to save your Workspace before you close it out so as not to have to re-input the system parameters again the next time you open up the Desktop and Workspace. Each Net has an associated PDF with both required and example learned parameters. Your user reoccurring passcode will be issued to you via a separate email.

Please note that Back-Testing over a period is extremely time consuming. Converting History into Real-Time will take considerable time and computer power and resources. For example, to Back-Test the Net over one day or 405 Bars of history S&P 500 1 Minute data, takes approximately 3 minutes on a Computer with a Pentium II, 2.6 GHz CPU and 512 MB Ram and this will decrease exponentially, when a more powerful platform is utilized. So if you wish to Back-Test a Net over several days you must be patient. Remember, your computer will be utilizing all its power to process this. Take a look at the Performance in your Windows Task Manager. This will help in trying to find the best and fastest computer hardware for this process. Firing NeuralScope(TM) Real-Time, is just that, (Real-Time) and all operations are instantaneous, to the fraction of a nanosecond. Here is an interesting video of Grace Hopper explaining Nanoseconds, Grace Hopper - Nanoseconds explains: https://www.youtube.com/watch?v=JEpsKnWZrJ8.

At the Tick resolution level the processing requirements are magnified again exponentially. Due to the enormity of the problem, you should never Back-Test more than a few days at the tick resolution level at a time, unless you have a very very powerful computer. With the Print Log turned on and while in Back-Testing mode, you will receive at the end of the PrintOutLog a report on Back-Testing Beginning and Ending Date and Times required to process. Based on these you can review the CPU time requirements for a particular time period. Neural Nets require the most memory and processing power. You need to also consider your Internet speed and router contention rate from your Internet service provider. All these elements are a factor in Real-Time verses Near-Real-Time and critical for you as a Trader. Anti-Virus and Firewalls, although a very important necessity, may also impact your computer's speed.

**System maintenance is imperative.** You may wish to try a free product called "CCleaner" by Piriform. This is a great Memory and Registry cleaning software for Windows and is rated very highly. It can be downloaded at https://www.piriform.com/ccleaner/download. Another great product is "Wise Registry Cleaner Free" by Wise, http://www.wisecleaner.com/wise-registry-cleaner.html It is very important to continually maintain your system's platform at all times. Additionally, running any other programs during your trading session is something you need to seriously consider. This includes any browsers, email clients and also, although important to be protected, antivirus software. It is recommended that you spend the time each day prior to trading doing system maintenance. You should also not let your trading system run endlessly without stopping it and closing out of everything in which to prevent systems memory bloat. There is no standard rule here, it is dependent upon your computer and its memory configuration.

During the NeuralScope(TM) Setup you will be taken to TradeStation®(9.5/10+) automatically to Import the NeuralScope(TM) Strategy files into TradeStation®(9.5/10+). Also the Net-Parameter files link will be located on your Desktop. You will need to have Adobe Acrobat Reader or similar PDF viewer installed on your computer. Adobe Reader is available at www.adobe.com.

Now you are ready to start using NeuralScope(TM). You now need to create a chart with at least three days of data in TradeStation®(9.5/10+) for the appropriate symbol and resolution. Once you have the chart you only need to insert the trading strategy NeuralScope(TM) into the created chart and process. Easier yet, you may wish to use our Desktops and Workspaces, already created and provide for you. This approach allows for a complete picture of the symbol and its activity while you trade.

If you are using the NinjaTrader®(7/8) Multi-Broker interface, you should start NinjaTrader®(7/8) 64bit and/or MetaTrader®4 version first. Make sure you are using the same instrument, as your TradeStation®(9.5/10+) environment for which you are running NeuralScope(TM) on. Review the setup of the MetaTrader®(4) and NinjaTrader®(7/8) interface below. Wether you are using NinjaTrader®(7/8) or MetaTrader®4, you must have MetaTrader®(4) and/or NinjaTrader®(7/8) installed on your computer, for the Application Programme Interface (API's), to connect to MetaTrader®(4) or NinjaTrader®(7/8) with TradeStation®(9.5/10+).

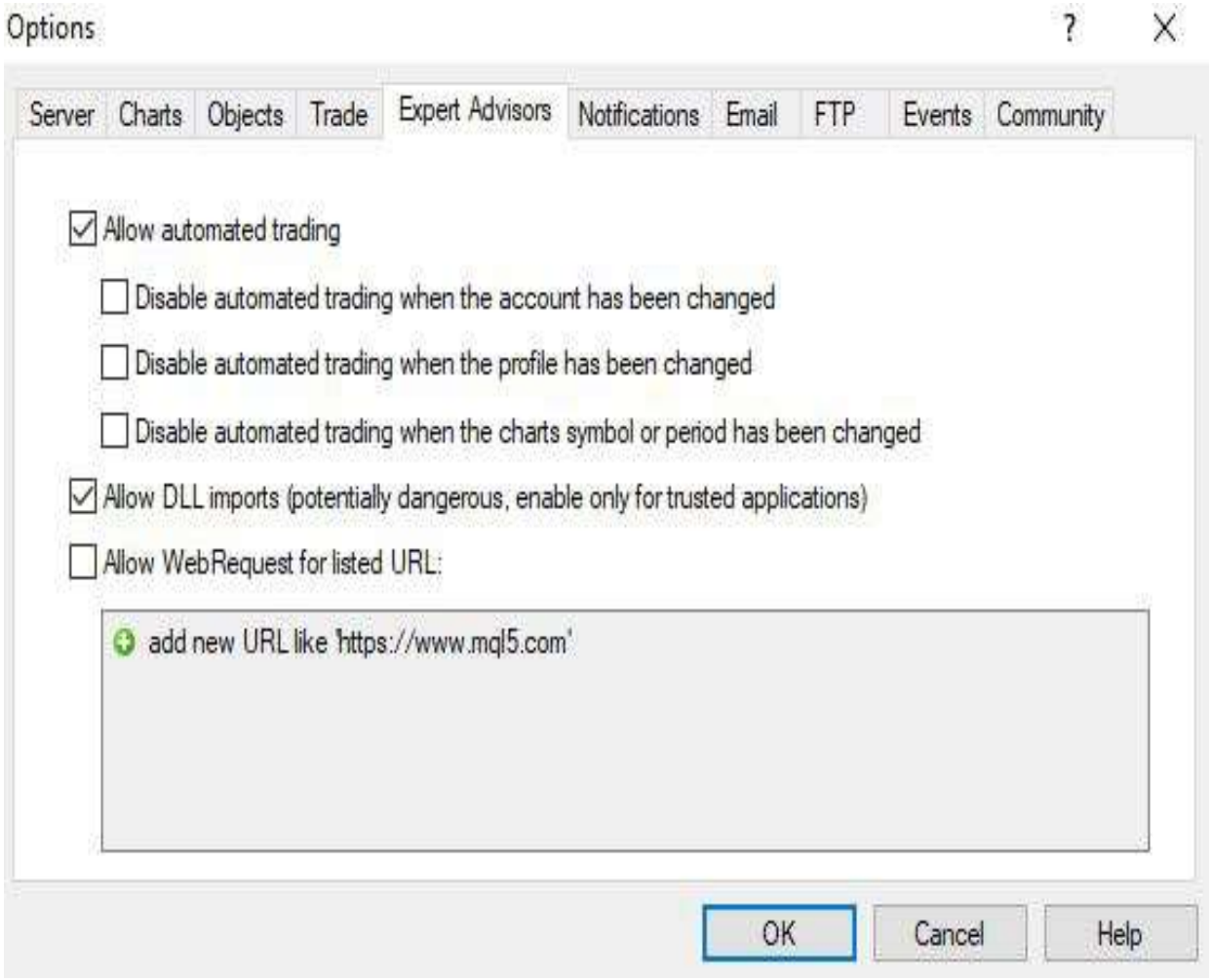
# ***MetaTrader®(4) Configuration***

The **MetaTraderAPI_NamedPipe** Expert Advisor
will need to be installed into one chart only
of the MetaTrader4 platform.

Additionally, the **Nsv18r7_VO** Indicator can be added
to each chart you wish to have the orders placed upon the screen

Once you have MetaTrader®4 installed, you only need to adjust one item as following;

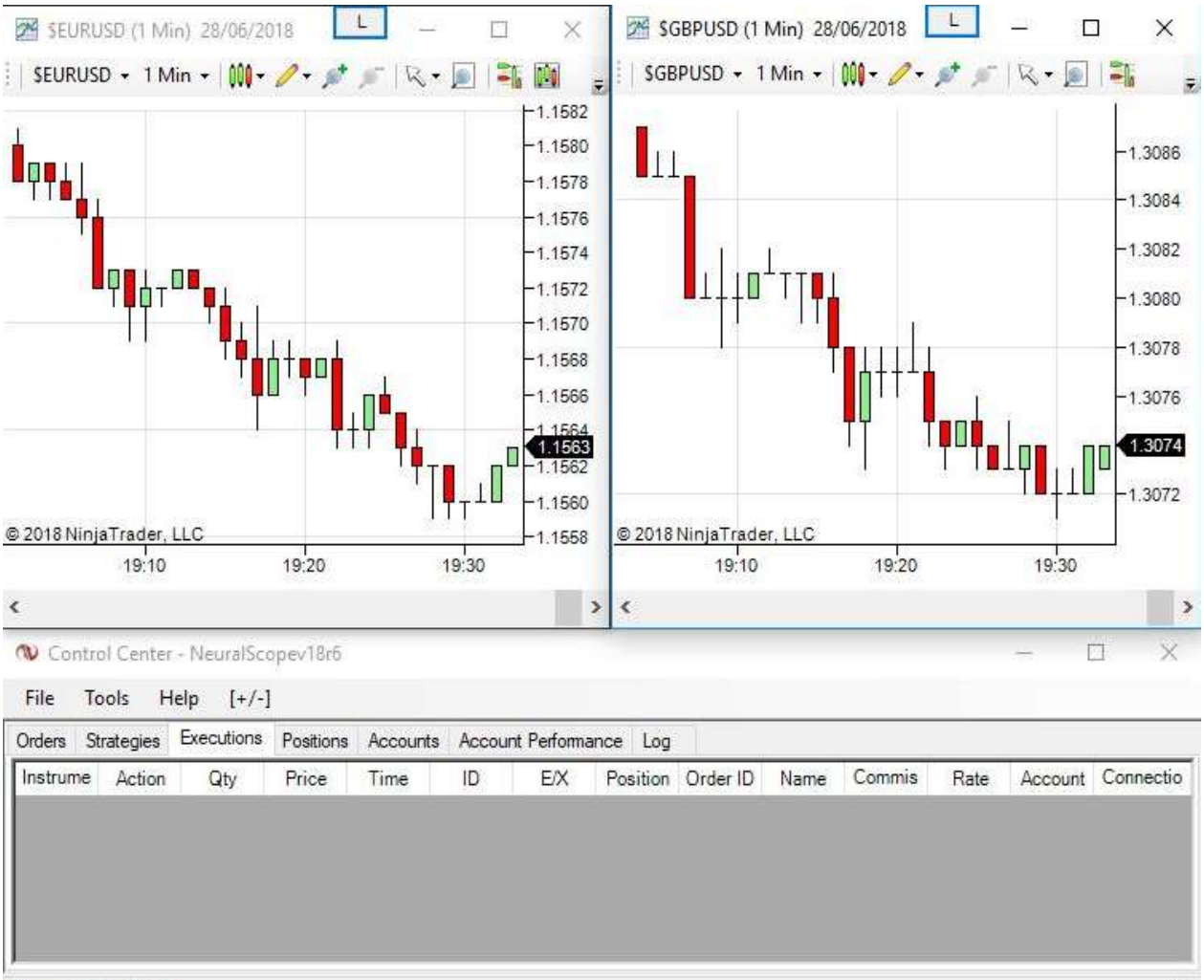
Tools, Options and Expert Advisors:




Once you have MetaTrader®4 all installed and configured,
you can open the already created profile for; NeuralScopev18r6_TSMT

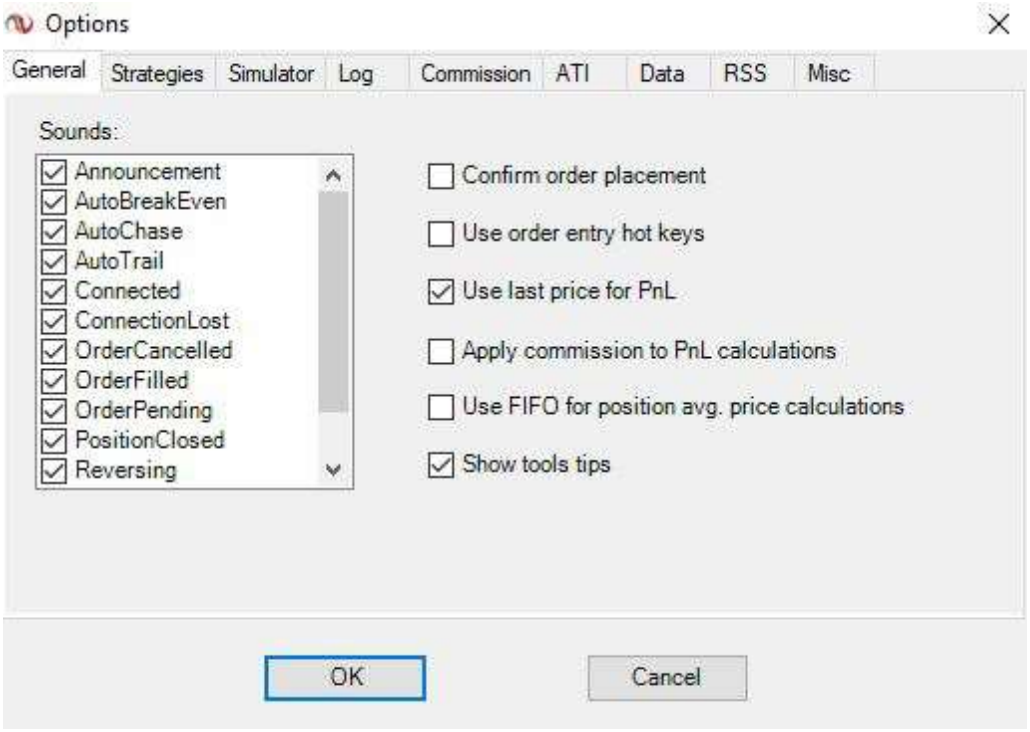
## ***NinjaTrader®(7) Configuration***

Once you have NinjaTrader®(7) installed, you only need to adjust a few items as following;




***Once you have NinjaTrader®(7) all installed and configured,***
***you can open the already created workspace for; NeuralScopev18r6***

***Options General:***

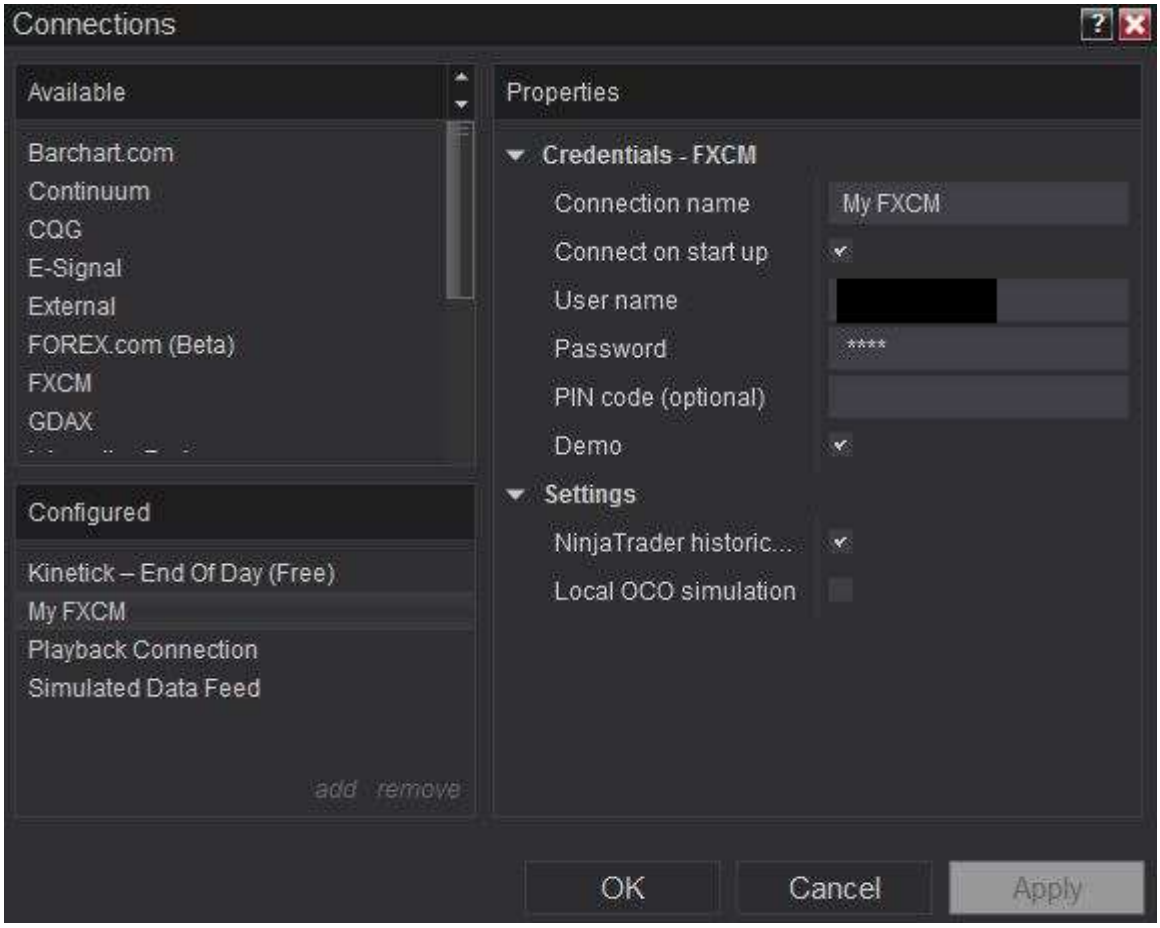


# ***NinjaTrader®(8) Configuration***

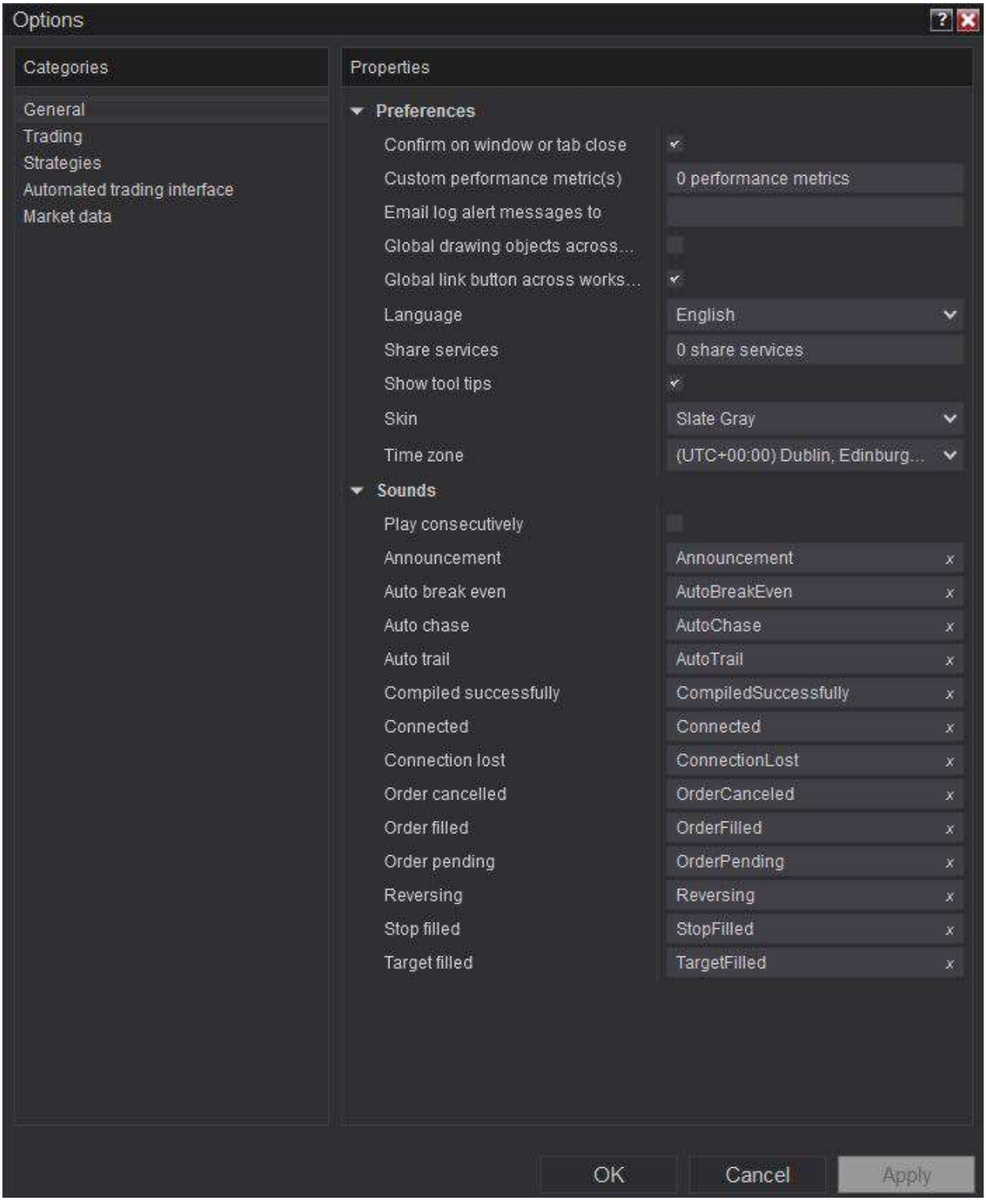
Once you have NinjaTrader®(8) installed, you only need to adjust a few items as following;

Once you have NinjaTrader®(8) all installed and configured,
you can open the already created workspace for; NeuralScopev18r6

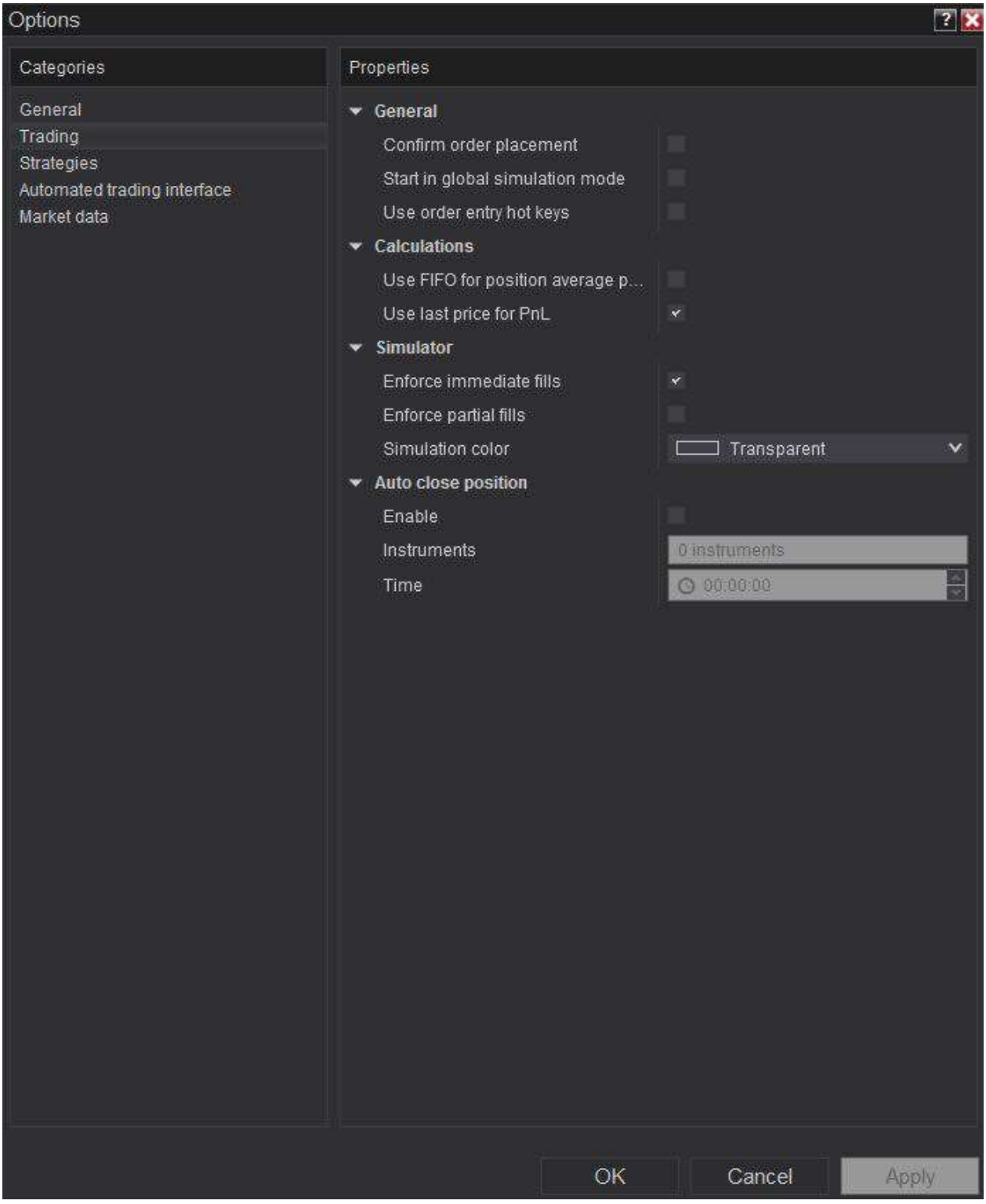
Connections:



Tools Options General:

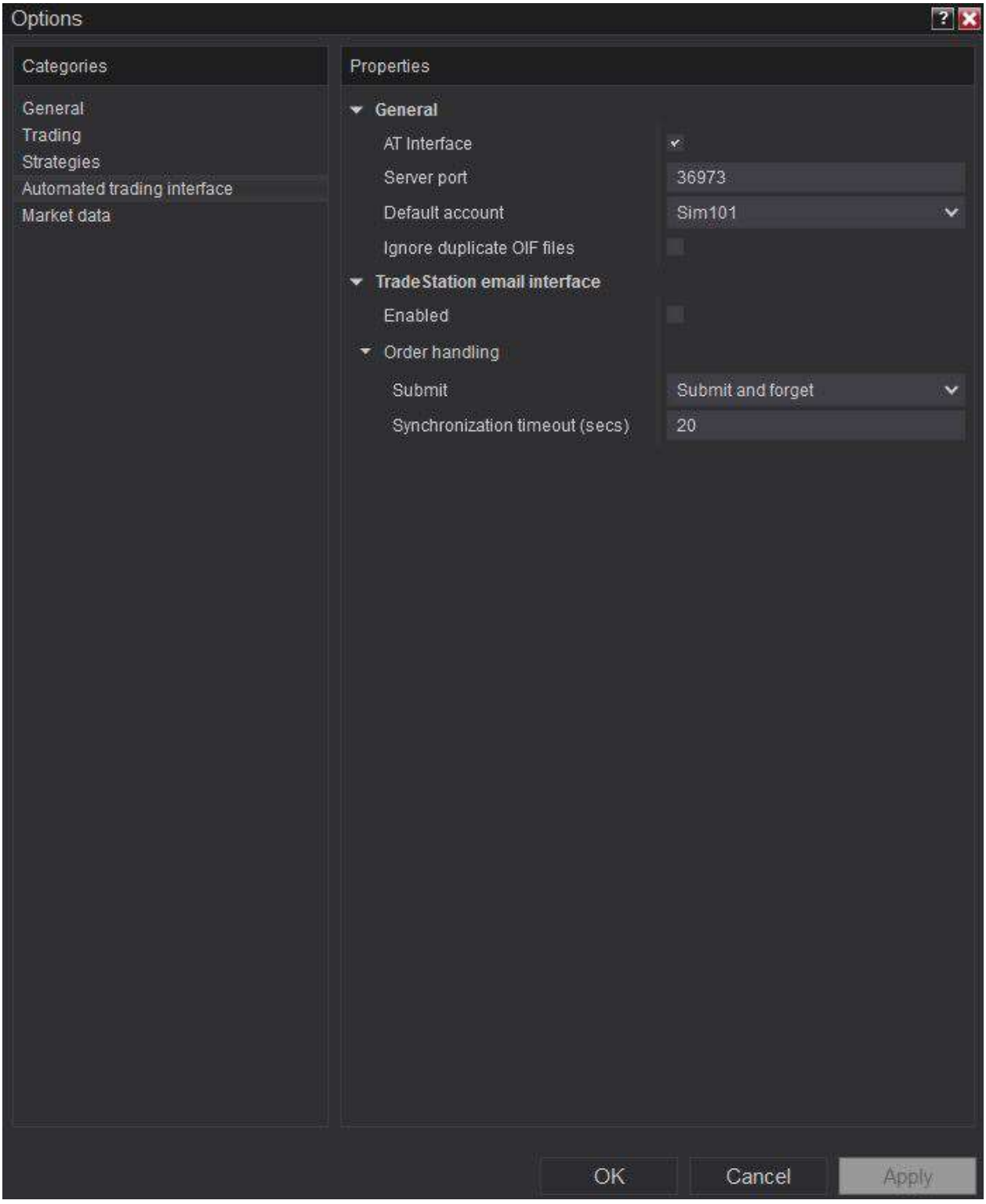


Tools, Options, Trading:

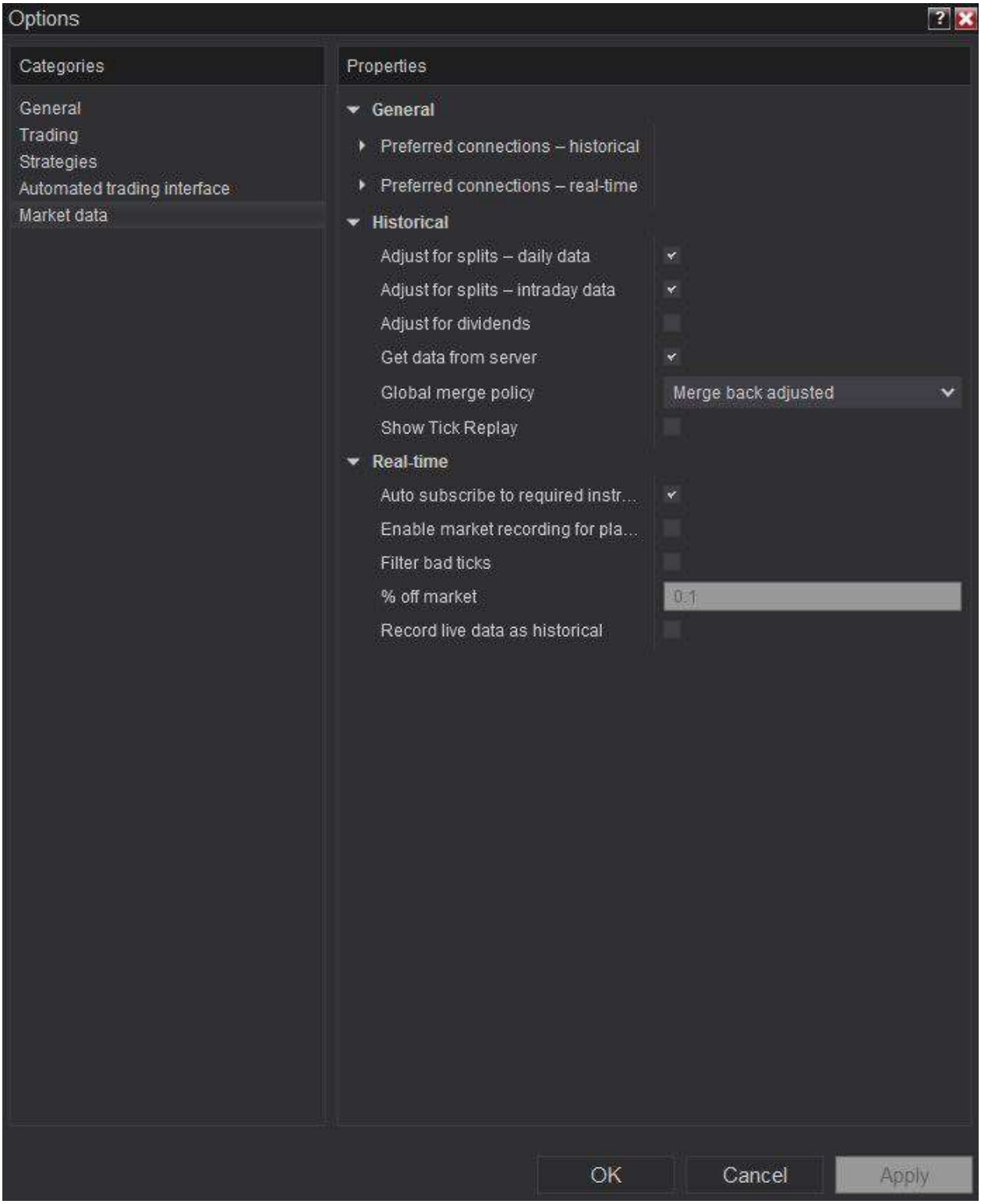


Tools, Options, Strategies:

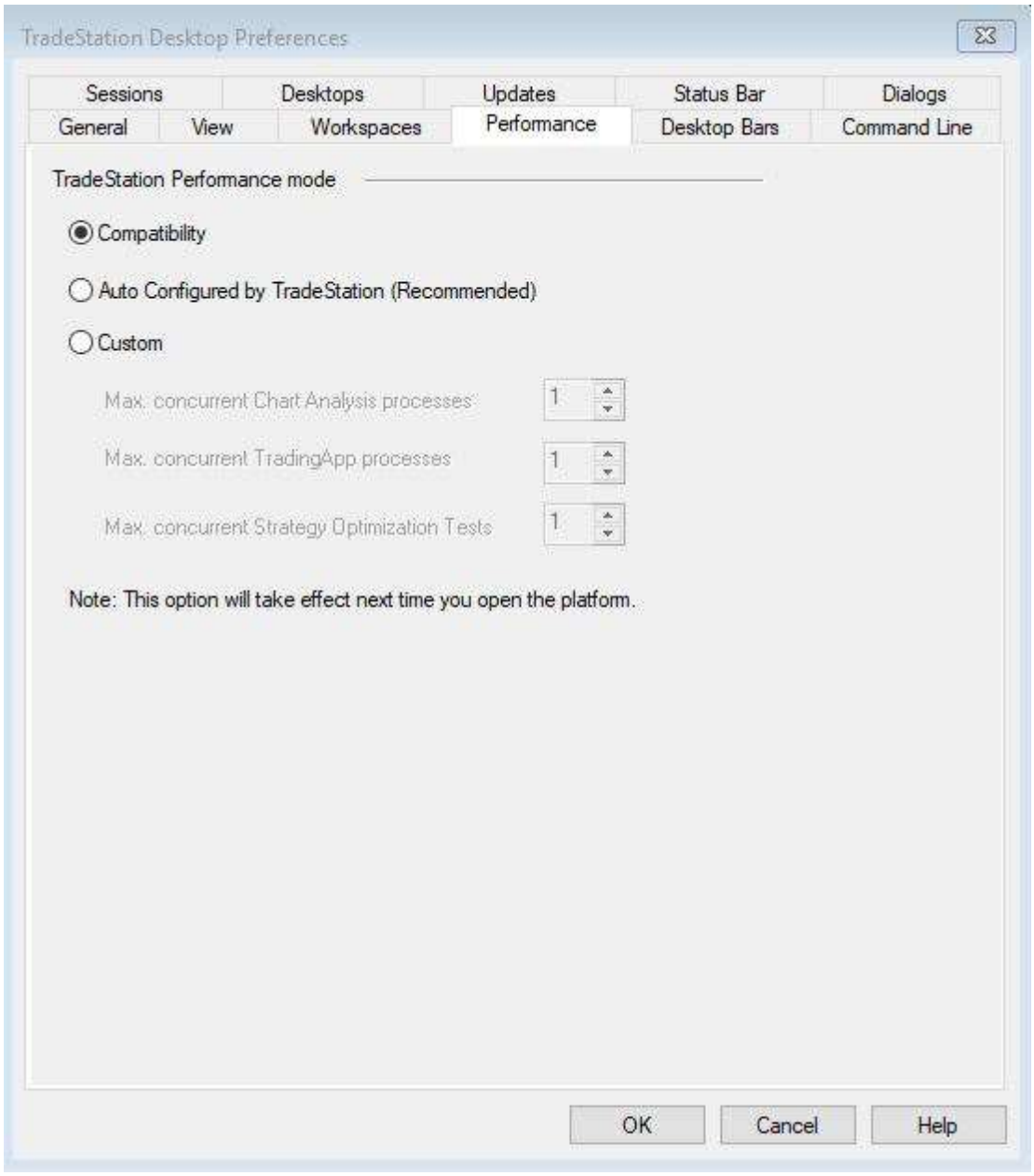
Tools, Options, Automated trading interface:



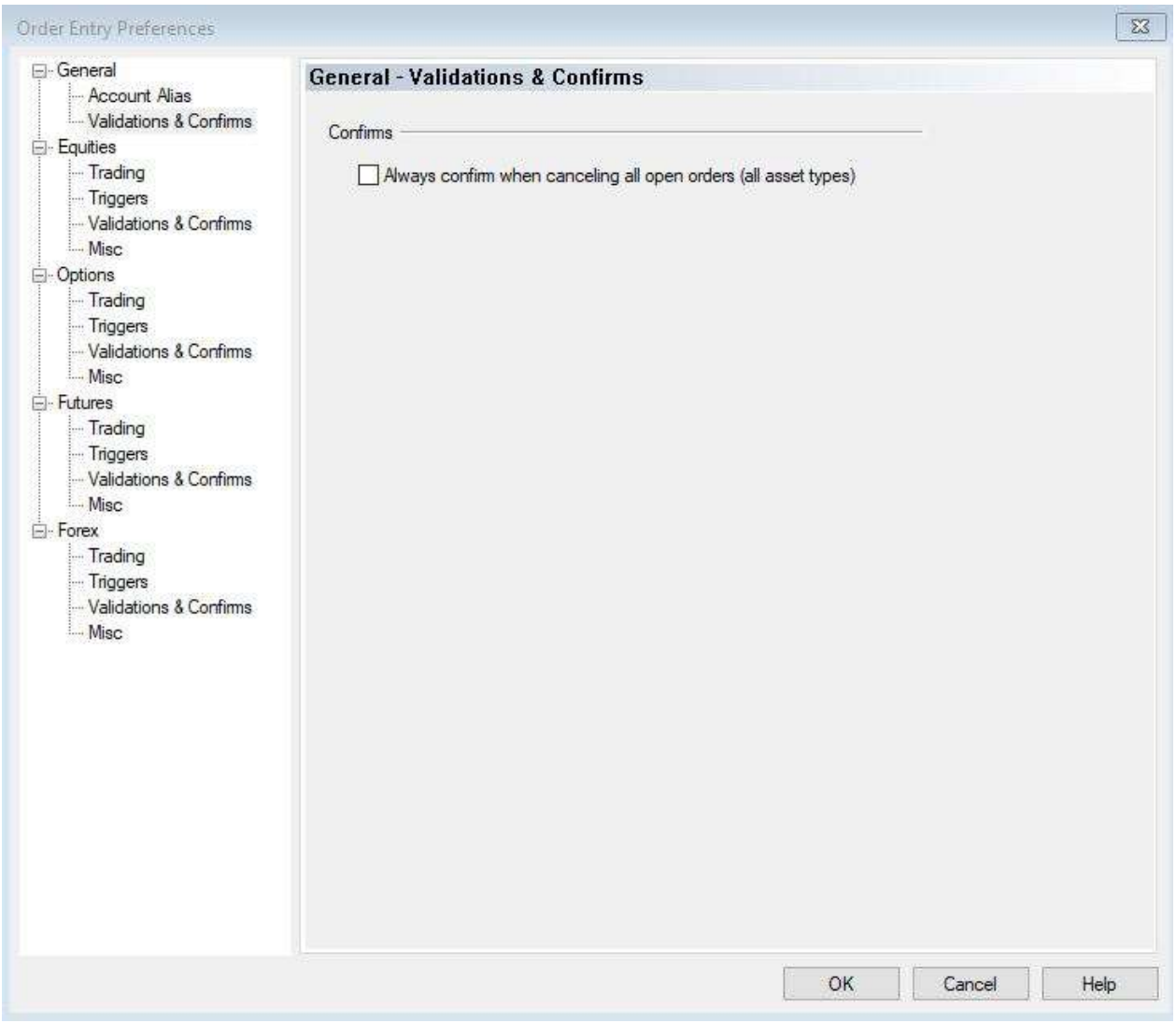
Tools, Options, Market data:



# ***TradeStation®(9.5) Configuration***




The only items needing attention in TradeStation®, is to insure that you are in Compatibility Mode under the Performance Tab in TradeStation® Desktop Preferences and the TradeStation Order Entry Preferences General Validations & Confirms unchecked. Additionally if you are on a server environment, you may need to give full read and write rights to the c:\neuralscope directory.


Order Entry Preferences
General
Account Alias
Validations & Confirms
Equities
Trading
Triggers
Validations & Confirms
Misc
Options
Trading
Triggers
Validations & Confirms
Misc
Futures
Trading
Triggers
Validations & Confirms
Misc
Forex
Trading
Triggers
Validations & Confirms
Misc
General - Validations & Confirms
Confirms
Always confirm when canceling all open orders (all asset types)
OK
Cancel
Help

Here is a very interesting YouTube video from Frances Hunt, Technical Analyst, Trader and Teacher who suggest and endorses pattern recognition and proper systematic trading, as the way of the future.

**Francis Hunt - Systematic and Pattern Trading – YouTube:**
***https://youtu.be/gYLyRwStCxA***

*Published on 5 Jan 2015*

*90% of traders lose money... So how to be in the top 10%? Francis Hunt a technical analysis trader and coach comments. What are the bad habits to avoid? What are some trading mistakes to avoid? Is trading FOREX, Indices and Commodities a giant casino? Decide on a strategy that looks after all elements of money management. You've got to manage losses and you need to have a system that will make more money than it loses. Patterns are probably the most important technical analysis tool.*

Here is the complete YouTube video series of Frances Hunt:

**Francis Hunt - Trading Video Series on YouTube:**
**https://youtu.be/jM_fx-JTdpY?list=PLnSelbHUB6GT9L_TanRe_sya0CV5_QHW-**

## User Interface & Strategy Inputs:

There are 214 Inputs within 5 Sections. In each Sections and also across Sections, NeuralScope(TM) inputs work in relationship or harmony with the other. This is important to remember when you make adjustments or optimize Inputs. NeuralScope(TM) comes with example preset default values that have provided very good results. The values are available in order to simplify the process a little for you, but are also flexible enough for you to optimize or select your own values and methodologies. Explore the possibilities for variation of the Modeling. Remember past results are not indicative of future gains.

**Note: Real-Time and Automated Trading Execution in NinjaTrader®(7/8):** It is important that you ensure that the connection to the NinjaTrader®(7/8) platform is active prior to engaging NeuralScope(TM) and subsequently activate Auto Trading. To make sure of this, we have included a separate application named: NeuralScopev18r6_TSNT_MarketData_Establishment. You can thus use this to check and insure that your remote data feed is active. It is best that after you have launched both NinjaTrader®(7/8) and TradeStation®(9.5/10+) platforms, that you status on the NeuralScopev18r6_TSNT_MarketData_Establishment first prior to starting the NeuralScope(TM) trading engine. This is not a always necessity, however once you have insured that you are connected to the NinjaTrader®(7/8) platform and receiving live data, you can Status Off the NeuralScopev18r6_TSNT_MarketData_Establishment and engage NeuralScope(TM) and Auto Trading. This procedure is only required again if you reboot your computer or shut down TradeStation® and NinjaTrader®(7/8) and need to reestablish the connection to the NinjaTrader®(7/8) connection port. You will need to insure that the NinjaTrader®(7/8) AT Interface is also active.

** Note: If you have already connected to NinjaTrader® and then relaunch the TradeStation® Platform without relaunching the NinjaTrader® Platform first, you will receive an Error: X Unhandled exception: There already is a market data handler subscribed. This has no effect on the connection and you can just select OK. You will see that the MarketData is subscribed and will receive the correct MarketData for the respective symbol.

It is also important that you have MetaTrader®(4) running and AutoTrader engaged prior to starting the NeuralScope(TM) Trading engine. You can view the Experts Tab to see that communication is indeed occurring.

# User Interface & Strategy Inputs:

NeuralScope_v18r6_MT(4)_NT(7-8)_TS(9-5-27+) Program Inputs

Url: https://www.neuralscope.com/docs/NeuralScope_v18r6_MT(4)_NT(7-8)_TS(9-5-27+)_Program_Inputs.pdf

Remember you may use any combinations of stops in which to accomplish your exit objectives. A " 0 " in the Floor of the Stop Unit will turn the respective Stop activity Off entirely. Also you may use any combinations of entry filters as well and again a " 0 " in the On/Off area will render it inactive.

**Special Note:** The best way to trade NeuralScope(TM) is to utilize it as a guide while reviewing the big picture and Fundamentals of the symbol and always remembering, that you are attempting to predict an outcome of both present and futuristic chaos. Not totally impossible, just very, very difficult. Fundamentals play an important part and there is **NO**, 100 % absolute, guaranteed outcome and therefore, definitely **NO** 100 % absolute systematic approach to predicting it. What you are attempting to do however, is to reduce the prediction error, through a valid scientific modeling approach, and that is exactly where NeuralScope(TM) is able to assist you with its very powerful Neural Net Pattern Recognition. Then it is up to you with proper Money Management in relation to Risk to Reward. Trying to keep a ratio of 3 to 1. (3 losses + 1 Profit) = A balance of 0 or better PnL.

**Back-Testing Error and Technology Slippage:** TradeStation®(9.5/10+) both offers a feature in which to turn on Look Inside The Bar. Due to this, Real-Time verses Back-Testing, at 1 tick resolution is more accurate to that of Real-Time minus Technology Slippage. TradeStation®(9.5/10+) both offers look inside the bar Back-Testing and Intra-Bar Order Generation and Calculations with Tick resolution. When Back-Testing and recreating history the system will require extensive resources and time to perform this task, however, during Real-Time this is indeed Real-Time minus Technology Lag and calculations are performed instantaneously. Signals are issued real-time through tick by tick data calculations, as they occur within the manager and strategy tracking center, when the enabled window notification, is turned on. The actual listed entry or exit of a trade will only appear on the TradeStation®(9.5/10+) chart after the close of the bar unless you have Intra-Bar order generation and calculation turned on, keeping in mind that some calculations on still only performed at the close of the Bar. It is always important to utilize the fastest possible computer and fastest data feed.

**Very Important, Real-Time Automated Trading Execution:** The best way to engage NeuralScope(TM) is outside of the scheduled trading Start_Time. For example, if Start_Time is set to 0600, you should, engage (Status On), NeuralScope(TM), 5 minutes before, or by 0555. You can also reset the the Start_Time to 5 minutes past current Time. For example, if Current Time is 0600, then set Start_Time to 0605. Remember, if your Data is set to Exchange Time to calculate the correct time as the Start_Time refers to the Data series (Exchange/Local) Time.

**NeuralScope(TM) Forecast Plot:** The value of NeuralScope(TM) Forecast is Plotted on your chart with the value printed in the Print Log when PrintOutLog is turned on. This is in the form of Moving Lines, (Green - Solid) and (Yellow – Dashed) and (Blue - Solid) and (Cyan - Dashed). The (Green) value (Forecast + PredictionLength) is; Close[1] -/+ Neural Net Value[1] and (Yellow) value (Actual) is; Close[1] -/+ Neural Net Value[PredictionLength]. The (Blue) value (Forecast + PredictionLength) is; Open[1] -/+ Neural Net Value[1] and (Cyan) value (Actual) is; Open[0] -/+ Neural Net Value[PredictionLength]In essence, this is Green as the Forecast and Yellow the Actual that was predicted (Forecast_Length) Bars ago. Interesting pattern correlation! When the Forecast matches the Actual, in a symmetrical shift, the Neural Net is modeling the pattern very well. This is information is reflected at the Close of a Bar in the Print Log. This is a continued study in Patterns, Cycles, Rhythms, Amplitude and Crossovers within Chaos! Observe the spectral dynamics and we welcome your comments or suggestions.

Neural Nets require the most memory and processing power. It is very important to continually maintain your systems platform at all times.

## Platform Synchronization

One of the most important issues to consider when using automated trading is the issue of synchronization between the local TradeStation®(9.5/10+) and the remote platforms MetaTrader®(4) and NinjaTrader®(7/8). The local machine needs to know what the current position and status is on the remote platform and whether orders have been hit in order to take the appropriate actions.

**Synchronization Issues**

There are always going to be problems with synchronization until we can communicate at the speed of light. For example when working a limit or stop order this order might be hit on TradeStation®(9.5/10+) and not on the MetaTrader®(4) or NinjaTrader®(7/8) platform. If the data source in TradeStation®(9.5/10+) is not the same as MetaTrader®(4) or NinjaTrader®(7/8) then this will make this more of an issue. There are three basic ways of resolving synchronization problems: TradeStation®(9.5/10+)-centred, MetaTrader®(4)-centred or NinjaTrader®(7/8)-centered system and then that of NeuralScope(TM) centred designs. The three platforms are

mostly independent and managed accordingly with most of the base calculations conducted on the TradeStation®(9.5/10+) platform side.

**TradeStation®(9.5/10+)-Centred Design**

With a TradeStation®(9.5/10+)-centred design you assume that TradeStation®(9.5/10+)'s view of the system is always right. Thus if you are filled on your limit order in TradeStation®(9.5/10+) then this is the position that MetaTrader®(4) or NinjaTrader®(7/8) should have. To ensure this you force the NinjaTrader®(7/8) position to be the same as the TradeStation®(9.5/10+) one at the start of each bar. This will obviously sometimes cause slippage on trades when a limit wasn't quite reached in MetaTrader®(4) or NinjaTrader®(7/8) but was reached in TradeStation®(9.5/10+). At the end of the bar the market may have moved away from the price again but nevertheless you force the trade at a worse price in order to ensure that the MetaTrader®(4) or NinjaTrader®(7/8) position closely matches the TradeStation®(9.5/10+) one. Because of this you typically want the bar size to be relatively small so that this correction doesn't happen long after the event. If for example one were trading off 30 minute bars on the system one might set up a multi-data chart with 1 minute bars as the first data set and 30 minute bars as the second. The order levels are calculated off the 30 minute chart but implemented on the 1 minute chart with the MetaTrader®(4) or NinjaTrader®(7/8) position being forced to that of the TradeStation®(9.5/10+) at the end of each 1 minute bar.

**NinjaTrader®(7/8)-Centred Design**

With a NinjaTrader®(7/8)-centred design on the other hand you assume that whatever happens on NinjaTrader®(7/8) is correct. In such a case you retrieve the positional information from NinjaTrader®(7/8) and act on it according to what you find. For example you retrieve the current NinjaTrader®(7/8) position and decide what orders to work on the basis of what you have retrieved. Problems with this method may come about if for example orders are hit between the positional information being retrieved and it being acted on.

**MetaTrader®(4)-Centred Design**

With a MetaTrader®(4)-centred design the same as NinjaTrader®(7/8)-centred design, you assume that whatever happens on MetaTrader®(4) is correct. In such a case you retrieve the positional information from MetaTrader®(4) and act on it according to what you find. For example you retrieve the current MetaTrader®(4) position and decide what orders to work on the basis of what you have retrieved. Problems with this method is also the same as NinjaTrader®(7/8)-centred design, if orders are hit between the positional information being retrieved and it being acted on.

**NeuralScope(TM)-Centred Design**

With a NeuralScope(TM)-centred design you are running a strategy on the TradeStation®(9.5/10+) platform, but utilizing the two different data feeds independently for position initiation and assessments. Therefore your results may be different due to the different data feeds and platform speeds and spreads. TradeStation®(9.5/10+) offers a stable, high-end mathematical processing environment, with one of the most reliable and respected data feeds in this arena. This is required to run NeuralScope(TM) due to the enormity of the mathematics within NeuralScope(TM), which is what NeuralScope(TM) offers. MetaTrader®(4) and/or NinjaTrader®(7/8) offers excellent execution speeds. Together they are a robust, fast and advanced analytical combination, in which to perform balanced electronic trading of the markets. With the NeuralScope(TM)-centred design Data is analyzed from the three platforms and trades are only executed when the Data is within a specified variance or tolerance of each other.

You can see how variation data can be, through taking into account Internet Provider speed, CPU speed, Local Memory, Hard Drive speed and Applications Overhead.

**Note: Very Important, If your TradeStation®(9.5/10+) platform recalculates while you are in an active trade, it is best to manually close all trades in all platforms in order to insure correct connection and synchronicity in platforms.**

If you use a product called TeamViewer, www.teamviewer.com, and connect your computer with another computer on the internet (Friend, Fellow Trader, etcetera), that is utilizing the same parameters, i.e. Same version of TradeStation®(9.5/10+) and NeuralScope(TM), you will see how different this process actually is. Dependent upon the Internet Provider, Proximity to the Central Office for the area, Proximity to the Central Global Net Ring and subsequently, Proximity to the Exchange. A good solution to some of the problems associated to self systems management, (keeping everything up to date, regular system cleaning, Internet provider speed), is to use a Dedicated

Trade Server. These are managed totally to maintain their performance and located near the Exchange. You run TradeStation®(9.5/10+) and NeuralScope(TM) on a Dedicated Server located at or near the Exchange. There are a number of these available and are very reasonably priced.

For Real-Time trading and the speed required at all times from your Platform, you may wish to even change your processes to running at High or Real-Time. This can be done through Task Manager at the Administrator level and utilizing the Detail view Tab. Select the Process which you wish to change with the Right Mouse Click and select Set priority, High or Real time and then select OK. Although, a warning is issued that this could cause Platform stability, we have not found this to be the case. As long as you don't go crazy and up everything to Real-Time, you should be fine. This will keep the vital Processes at the forefront of the OS and Kernel. Recommend that you only up the TradeStation®(9.5/10+) processes, (Including TsRTAServer, ELIS and WHServer.exe) to High or Real time and MetaTrader®(4) and NinjaTrader®(7/8) processes to Above Normal. It is not necessary to up the TSDev process which is the TradeStation®(9.5/10+) Development Environment. Additional to these, we up the explorer.exe (NT Root) to High, dwm.exe (Desktop Windows Management) to High. If you discover others and improvements, we would be very happy to hear from you. Please email: neuralscopesupport@catech.com, thank you. Also, you want to ensure that your PC Power Settings are set to Maximum for the Drive, CPU and Graphic Card and you do not have any times in hibernation, sleep or any other reduced elements. Remember Platform speed is one of the most critical elements in this massive equation. Even to the level of disabling, Firewalls and Anti-Virus during trading for the execution platform, that is only connected to the TradeStation®(9.5/10+), MetaTrader®4 and NinjaTrader®(7/8) Platforms. Remember do not install or run email clients or unprotected Browsers on your Trading Platform. This is a method for potential doom!

# NOW, VERY VERY IMPORTANT:

## Warning!

### Automated trading should never be left unsupervised while activated!

**NeuralScope(TM) is for information purposes only and should be operated accordingly.**

******* NeuralScope(TM) or any of its affiliates maintains no liability in the usage *******
******* or performance for any automated trading or trading in general. *******

**You accept all responsibilities for any trading operations.**

**You should always have a Back-Up and Fail-Safe manual strategy in place. Example: (Trade Desk direct contact telephone, alternative communications, even keeping an old fashion two wire (trip & hook), headset at the ready). You should never be unprotected, from an alternative method of communicating directly to the Trade Desk of your Broker.**

**There could be occurrences of Platform, Data, Strategy or Systems Failure, which could cause the systems to become DeSynchronised.**

**This could subsequently leave you fully exposed in open positions and at risk of serious losses. Observance is always required, for your safety, security and peace of mind.**

**Remember, you can always override NeuralScope(TM) and any of the three platforms and make direct trades, both in or out of the Market. This of course violates the systematic trading principals and rules, however in times you may need to close a trade manually.**

# Program Lease License Agreement

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You acknowledge that you have read this agreement, understand it, and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between you and CAT which supersedes any proposal or prior agreement, written or oral, and any other communications between you and CAT relating to the subject matter of this agreement.

All leases of NeuralScope(TM) are final and no refunds are warranted or issued. You have been granted a 15 day trial period in which to decide if you want to continue with a NeuralScope(TM) lease and no charges will be made until the 15 day trial period has expired. Notification of your desire to cancel your lease of NeuralScope(TM) must be received prior to the ending of the trial period.

## Commodity Futures Trading Commission Disclosure:

"Hypothetical performance results have many inherent limitations, some of which are described below. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently achieved by any particular trading program. One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading, for example, the ability to withstand losses or to adhere to a particular trading program in spite of trading losses are material points which can also adversely affect actual trading results. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results and all of which can adversely affect actual trading results."

## SEC Disclosure:

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## Full Risk Disclosure:

**The following statement is furnished pursuant to Commodity Futures Trading Commission ("CFTC") Regulation 1.55(c).This brief statement does not disclose all of the risks and other significant aspects of trading in futures, FOREX and options. In light of the risks, you should undertake such transactions only if you understand the nature of the contracts (and contractual relationships) into which you are entering and the extent of your exposure to risk. Trading in futures, FOREX and options is not suitable for many members of the public. You should carefully consider whether trading is appropriate for you in light of your experience, objectives, financial resources and other relevant circumstances.**

The risk of loss in trading commodity futures contracts and foreign currency can be substantial. You should, therefore, carefully consider whether such trading is suitable for you in light of your circumstances and financial resources. You should be aware of the following points:

1. You may sustain a total loss of the funds that you deposit with your broker to establish or maintain a position in the commodity futures market or foreign exchange market, and you may incur losses beyond these amounts. If the market moves against your position, you may be called upon by your broker to deposit a substantial amount of additional margin funds, on short notice, in order to maintain your position. If you do not provide the required funds within the time required by your broker, your position may be liquidated at a loss, and you will be liable for any resulting deficit in your account.
2. The funds you deposit with a futures commission merchant for trading futures and FOREX positions are not protected by insurance in the event of the bankruptcy or insolvency of the futures commission merchant, or in the event your funds are misappropriated.
3. The funds you deposit with a futures commission merchant for trading futures or FOREX positions are not protected by the Securities Investor Protection Corporation even if the futures commission merchant is registered with the Securities and Exchange Commission as a broker or dealer.
4. The funds you deposit with a futures commission merchant are generally not guaranteed or insured by a derivatives clearing organization in the event of the bankruptcy or insolvency of the futures commission merchant, or if the futures commission merchant is otherwise unable to refund your funds. Certain derivatives clearing organizations, however, may have programs that provide limited insurance to customers. You should inquire of your futures commission merchant whether your funds will be insured by a derivatives clearing organization and you should understand the benefits and limitations of such insurance programs.

5. The funds you deposit with a futures commission merchant are not held by the futures commission merchant in a separate account for your individual benefit. Futures commission merchants commingle the funds received from customers in one or more accounts and you may be exposed to losses incurred by other customers if the futures commission merchant does not have sufficient capital to cover such other customers' trading losses.
6. The funds you deposit with a futures commission merchant may be invested by the futures commission merchant in certain types of financial instruments that have been approved by the Commission for the purpose of such investments. Permitted investments are listed in Commission Regulation 1.25 and include: U.S. government securities; municipal securities; money market mutual funds; and certain corporate notes and bonds. The futures commission merchant may retain the interest and other earnings realized from its investment of customer funds. You should be familiar with the types of financial instruments that a futures commission merchant may invest customer funds in.
7. Futures commission merchants are permitted to deposit customer funds with affiliated entities, such as affiliated banks, securities brokers or dealers, or foreign brokers. You should inquire as to whether your futures commission merchant deposits funds with affiliates and assess whether such deposits by the futures commission merchant with its affiliates increases the risks to your funds.
8. You should consult your futures commission merchant concerning the nature of the protections available to safeguard funds or property deposited for your account.
9. Under certain market conditions, you may find it difficult or impossible to liquidate a position. This can occur, for example, when the market reaches a daily price fluctuation limit ("limit move").
10. All futures, FOREX and options positions involve risk, and a "spread" position may not be less risky than an outright "long" or "short" position.
11. The high degree of leverage (gearing) that is often obtainable in futures and FOREX trading because of the small margin requirements can work against you as well as for you. Leverage (gearing) can lead to large losses as well as gains.
12. In addition to the risks noted in the paragraphs enumerated above, you should be familiar with the futures commission merchant you select to entrust your funds for trading futures positions. As of July 12, 2014, the Commodity Futures Trading Commission requires each futures commission merchant to make publicly available on its Web site firm specific disclosures and financial information to assist you with your assessment and selection of a futures commission merchant. Information regarding this futures commission merchant may be obtained by visiting the websites of the respective FCM partner.

ALL OF THE POINTS NOTED ABOVE APPLY TO ALL FUTURES AND FOREX TRADING WHETHER FOREIGN OR DOMESTIC. IN ADDITION, IF YOU ARE CONTEMPLATING TRADING FOREIGN FUTURES OR OPTIONS CONTRACTS, YOU SHOULD BE AWARE OF THE FOLLOWING ADDITIONAL RISKS:

13. Foreign futures transactions involve executing and clearing trades on a foreign exchange. This is the case even if the foreign exchange is formally "linked" to a domestic exchange, whereby a trade executed on one exchange liquidates or establishes a position on the other exchange. No domestic organization regulates the activities of a foreign exchange, including the execution, delivery, and clearing of transactions on such an exchange, and no domestic regulator has the power to compel enforcement of the rules of the foreign exchange or the laws of the foreign country. Moreover, such laws or regulations will vary depending on the foreign country in which the transaction occurs. For these reasons, customers who trade on foreign exchanges may not be afforded certain of the protections which apply to domestic transactions, including the right to use domestic alternative dispute resolution procedures. In particular, funds received from customers to margin foreign futures transactions may not be provided the same protections as funds received to margin futures transactions on domestic exchanges. Before you trade, you should familiarize yourself with the foreign rules which will apply to your particular transaction.
14. Finally, you should be aware that the price of any foreign futures or option contract and, therefore, the potential profit and loss resulting therefrom, may be affected by any fluctuation in the foreign exchange rate between the time the order is placed and the foreign futures contract is liquidated or the foreign option contract is liquidated or exercised.

**THIS BRIEF STATEMENT CANNOT, OF COURSE, DISCLOSE ALL THE RISKS AND OTHER ASPECTS OF THE COMMODITY AND FOREIGN CURRENCY MARKETS.**

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Most systems are based on historical formulas which have worked in the past. However, what has happened before may or may not happen again. You can lose all your money trading futures and options and you must decide your own suitability as to whether or not to trade. Only trade with true risk capital you can afford to lose. Only trade markets you can properly afford to trade. Properly funded trading accounts typically perform better than those that are not. Never risk more than 5% of your account on any one trade. Stop trading a system if it doesn't fit your trading style and find you cannot follow the signals.

There are no guarantees or certainties in trading. Reliability of trading signals for mechanical systems are in probabilities only. Trading involves hard work, risk, discipline and the ability to follow rules and trade through any tough periods during a system's draw downs. If you are looking for a guarantee, trading is probably not for you. Truth is, a lot of people lose trading. One of the reasons is that they lack discipline and are unable to be consistent. A system can help you become consistent. The ability to be disciplined and take the trades is equally as important as any technical indicators a trader uses. Ironically, worrying about the money aspect of trades can contribute to and cause a trader to make trading errors. Therefore, it is important to only trade with true risk capital and make every effort to minimize risk.

This is not investment advice. **We are not brokers** and do not place or execute your trades. All trading systems have both winning and losing trades as part of their strategy. NeuralScope(TM) does not execute your trades Live to your account unless you have specifically instructed it to and the liability is fully yours. Any advisory or signal generated by NeuralScope(TM) software is provided for informational and advisory purposes only. Any trades placed upon reliance on NeuralScope(TM) are taken at your own risk for your own account. Past performance is no guarantee of future results. Information on our site is provided for reference purposes only and it is not recommended that you use them for trading. While there is great potential for reward trading FOREX, commodity, stocks, futures or options, there is also substantial risk of loss in all futures and options trading and you must decide your own suitability to trade. Future trading results can never be guaranteed. This is not an offer to buy or sell s FOREX, commodity, stocks, futures or options interests.

We reserve the right to refuse/limit NeuralScope(TM), Lease Subscriptions at any time.

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**Incentive Offer Programme:** At NeuralScope(TM) we have attempted to offer a number of excellent possibilities in which to assist with your trading initiatives. We have also attempted to insure that NeuralScope(TM) is totally free of any erroneous code or bugs and have stress tested and beta tested the software thoroughly. Additional to this, we would like of offer you this Incentive Programme, in which to assist in the continued advancement of NeuralScope(TM). Therefore, should you be able to offer an improvement or find a Bug and offer a solution or fix to this that is accepted, we would like to offer you a complementary one month subscription as a thank you for your assistance. Please contact us at neuralscope@catech.com with your comments and/or solution and we will review this and in the event that we accept this improvement, we will then grant you a one month complementary subscription license to NeuralScope(TM). This is a value of $200.00, as a thank you for your assistance.

Again, we would like to thank you for considering NeuralScope(TM) as your trading strategy of choice. We look forward to serving all your future trading requirements.

**NeuralScope(TM)** is a product created and developed by:

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