

人工智能期权全自动机器人-市场建模 – LaoQin

The modeling of the forex market, an EA robot using Artificial Intelligence

The modeling of the currencies movement in the forex market is difficult. It is a time-varying system with much dynamics demanding as the number of freedom of the system is very difficult to control and most important is that the environment is changing rapidly. Using the DSP terminology, our operation is a forward estimation process. The inputs are the market data and the related news, the expected outputs are up-or-down(buy-or-sell) direction and the suitable investment quantity (the lots). We can modeling the market behavior using a transition matrix. The system is operated in a closed circle and the inner operation is modified step by step for, statistically, a better output. It looks like the Kalman filter. I'd say it as a forward tracking process like a guided missile.

对外汇市场中货币运动规律的建模是困难的。这是一个随时间变化的系统，动态要求很高，因为自由度很难控制，环境在迅速变化。使用 DSP 术语，我们的操作是一个前向估计过程。输入的是市场数据和相关消息，预期的产出是涨跌（买入或卖出）信息和的投资数量（手数）的选择。我们可以使用一个过程矩阵来建模市场行为。系统运行在一个闭合的循环中，并且内部操作随着数据的输入和环境变化被逐步地修使其在统计学意义上给出更合理的结果。它看起来就像一个传统的卡尔曼滤波器。我会把它说成是导弹指向目标一样的前向跟踪过程。

If AI(Artificial Intelligence) is introduced into the process, the parameters in the modeling matrix should be modified based on the environment. It is training/learning all the time. Even though, the rapid change of the environment makes the learning very difficult. When the system gets the parameters right, the wave is already gone.

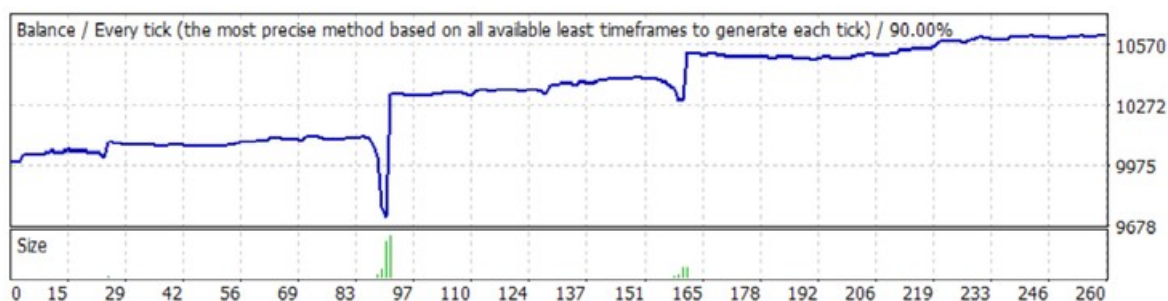
如果将人工智能引入到过程中，则矩阵中的参数应根据环境进行修正和优化。它是一个不断训练和学习的过程。即使如此，环境的快速变化使得学习和跟踪变得非常困难。当系统正确地获取参数时，波浪已经消失。

Here I provide an EA robot for testing purpose in which a modified Kalman filter is used. The statistical properties are based on the EURUSD pair for 15M data of the whole year of 2017. The figure below shows the result.

经过多年的研究，我这里提供我自己编制的一个 EA 机器人全自动操盘手给大家用于测试目的。其中使用了改进的卡尔曼滤波器。统计数字基于 EURUSD 货币对，2017 年全年的 15M 数据。下图显示了全年测试的结果。

Strategy Tester Report LaoQinTracking_EA

Symbol	EURUSD (Euro vs US Dollar)		
Period	15 Minutes (M15) 2017.01.02 00:00 - 2017.12.29 23:45 (2017.01.01 - 2017.12.31)		
Model	Every tick (the most precise method based on all available least timeframes)		
Bars in test	25805	Ticks modelled	20414148
Mismatched charts errors	0		
Initial deposit	10000.00	Spread	2.39
Total net profit	618.00	Gross profit	1573.40
Profit factor	1.65	Expected payoff	2.39
Absolute drawdown	437.40	Maximal drawdown	889.20 (8.33%)
Total trades	259	Short positions (won %)	129 (38.76%)
		Profit trades (% of total)	114 (44.02%)
		Largest profit trade	604.20
		Average profit trade	13.80
		Maximum consecutive wins (profit in money)	9 (50.80)
		Maximal consecutive profit (count of wins)	604.70 (2)
		Average consecutive wins	2
		consecutive losses (loss in money)	8 (-20.90)
		consecutive loss (count of losses)	-400.90 (6)
		consecutive losses	3
		Modelling quality	90.00%
		Current (1)	-955.40
		Relative drawdown	8.33% (889.20)
		Long positions (won %)	130 (49.23%)
		Loss trades (% of total)	145 (55.98%)
		loss trade	-249.40
		loss trade	-6.59
		consecutive losses (loss in money)	8 (-20.90)
		consecutive loss (count of losses)	-400.90 (6)
		consecutive losses	3



We can see that the robot works quite smoothly during the normal time, but with big drawdown (the down spikes) on the big red news. If your capital is good enough, the robot can help you to regain the normal winning process. The capital gain could be over 50%.

我们可以看到，机器人在正常的时间里运行得非常平稳，但是在大的新闻出现时有大幅下降（图中向下的毛刺）。即便如此，如果你的资金足够充实，在波浪过后，机器人可以帮助你重新回归获利的过程。获得 50% 的年度利润是大概率事件。

You might think that why don't you stop the trading before every red news. This is a normal suggestion for all indicator/EAs. The backtest cannot avoid the red news, but in the real situation, you can simply close all orders and shut down the EA, waiting for the news to pass by and to start over again.

你可能会为问，什么不在每个大的新闻之前停止交易。非常正确！上面的回测过程不能避开大的新闻，但在实际情况下，您可以简单地关闭所有的单子，关闭 EA，等待消息通过，并再次启动。

Yes, it is true that many skilled traders do it this way. But I would say that the big wave gives big chance. The problem for the red news is that the running speed of the tracking process cannot follow the rapid change. If you modify the transition matrix that can do a fast track to follow the trend you can change the history. The trend change in big news normally is in a matter of seconds. You can not follow it by using the minimum 1M chart. You have to use the tick data. Next figure shows the test result of a faster trend tracking using the tick data.

许多熟练的交易员也确实这样做的。但是我想说的是，大波浪意味着大的机会。大新闻的问题在于系统跟踪过程的运行速度跟不上市场的快速变化。但是如果你修改成快速的跟踪来追踪趋势，则可以改变历史。大新闻的发展趋势的变化通常在秒的数量级。你不能通过使用 MT4 中最小的 1M 图表来跟踪它。你必须使用及时数据。下图显示了使用及时数据进行快速学习和快速跟踪的测试结果。

Initial deposit	10000.00	Spread	Current (1)
Total net profit	1012.40	Gross profit	1647.70
Profit factor	2.59	Expected payoff	7.85
Absolute drawdown	73.80	Maximal drawdown	298.40 (2.89%)
Total trades	129	Short positions (won %)	64 (31.25%)
		Long positions (won %)	65 (53.85%)
		Profit trades (% of total)	55 (42.64%)
		Loss trades (% of total)	74 (57.36%)
		Largest profit trade	840.00
		Average profit trade	29.96
		Maximum consecutive wins (profit in money)	5 (34.40)
		Maximal consecutive profit (count of wins)	840.30 (2)
		Average consecutive wins	2



You can see that the big red news is no problem anymore, instead, it becomes the big advantage. If you could master the circumstance, it is easy to double your capital in a short time.

你可以看到，大消息的影响已经不再是问题，反而成为了大的利好。注意，这是机器人在自动帮你操作。如果掌握得好，翻翻应该不是大问题。记得有一次，我在非农时打开机器人手，由于变化幅度大，机器人跟踪的速度快，十分钟内账上的资金就翻了一翻。

The attached files: (程序包内)

LaoQin_KLM_Trend.ex4

Trend meter (趋势)

LaoQin_KLM_Tracking_EA.ex4

Robot for tracking the trend (操盘手)



The trend meter is based on a modified Kalman filter. There is absolutely **no repainting**. You can adjust "RunningSpeed" for the best effect. You can turn it faster to follow the price trend. Or you can turn it slower for the long term trend. There is also an Alert function. It gives alert when the trend changed.

趋势表是根据修改后的 Kalman 做成的，绝对保证没有未来函数！'RunningSpeed'用来调节速

度来适应不同的环境。短时趋势用快速，长时趋势用慢速。当趋势变化时，会有一个提醒。你也可以将这个提醒功能屏蔽掉。

If you would like to combine it into your own software (EA/indi), you can use the global parameter (tools/global variable) for the trend. 1=up / -1=down. Or you can use the buffer #2 for the trend strength in your iCustom(). There is also an Alert function. It gives alert when the trend changed.

爱编程的童鞋们可以将这个趋势指标很方便地融入自己的宝贝。有两种办法。第一种是使用这个趋势指标提供的全局变量（工具/全局变量），1 是 UP，-1 是 DOWN。还有一种办法是在你的 iCustom 中利用 Buffer #2 中的趋势强度。

The Robot works together with the trend meter. AI algorithms are introduced for tracking the market environment. You can run many pairs at the same time if your capital is enough. My suggestion is that for 1000\$ account you can run only one pair. I will put a risk factor in the next release.

程序包中的操盘手结合了这个趋势指标，并引入了人工智能的算法，在学习中使其更好地向市场靠近。你可以同时在不同的货币对中使用这个操盘手，但是注意，每一千美元的账户最多发一单。我这里正在考虑风险控制的问题以便在下一个版本中加入。

SETUP

1. Open a demo account with at least 1000\$ and the leverage of 1:200 or 1:500.
2. Put the trend meter into the "MQ4/Indicators" folder.
3. Put the robot into the "MQ4/experts" folder.

具体操作

1. 开一个至少 1000\$ 的模拟账户, 杠杆 1:200 或者 1:500;
2. 将 LaoQin_KLM_Trend.ex4 拷入 "MQ4/Indicators" 子目录;
3. 将 LaoQin_KLM_Tracking_EA.ex4 拷入 "MQ4/experts" 子目录。

NOTE

1. A demo version! Don't use it in a live account. Be responsible for your own money.
2. The fast-tick tracking is not included in this demo, stop it before the red news.
3. Please be kind to respect the intellectual property. It includes years' work.
4. At the moment, the robot is still in the infant stage. I will continue to train it.

注意

1. 这仅仅是一个 DEMO 版！不要用你的 Live Account，你对自己的资金负责；
2. 由于是 DEMO 版，很多参数和功能都有局限，例如，只能以 0.01 手开张；
3. 上面提到的快速跟踪不在这个 DEMO 版中，所以在大赛来临前最好关闭；
4. 请尊重知识产权，程序虽小，但包含了作者多年的心血；
5. 程序在不断地改进中，我们的机器人童鞋在不断地学习中，请注意更新。