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ARTIFICIAL INTELLIGENCE

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ARTIFICIAL INTELLIGENCE.

1.-PRINCIPLES OF ARTIFICIAL INTELLIGENCE

For this point in the lessons we have already known the best tools of technical and econometric analysis that help us as traders to make the best investment decisions by predicting future behavior in the instruments, now we will go into a new and revolutionary subject that today is optimizing and making the financial environment easier, this is Artificial Intelligence.

Although there is still much development to be done, there is no denying the impact that Artificial Intelligence already has on our lives. When we speak of Artificial Intelligence (or AI) we do not refer to humanoid-looking robots that think like us, but to a succession of algorithms that help us extract value from large volumes of data in an agile and efficient manner, facilitating automatic decision making. These algorithms need to be trained with quality data so that their behavior fits the rules of our social context.

Currently, Artificial Intelligence has a great impact on the business value chain, and conditions many of the decisions made not only by companies but also by individuals. That is why it is essential that the data they use is not biased and that it respects human rights and democratic values.

It is already a fact that AI will soon be present in all areas of our lives. To this end, both the European Union and the governments of different countries are promoting policies that will help make this integration efficient and healthy for societies; to help them in this process, the OECD (Organization for Economic Cooperation and Development) has developed a series of minimum principles that AI systems should comply with. These are a set of practical

and flexible standards that can withstand the passage of time in a constantly evolving field. These standards are not legally binding but seek to influence international standards and function as a basis for different legislation.

These recommendations were adopted on May 22, 2019 by the member countries of the OECD.

These recommendations identify five complementary value-based principles for the responsible management of Artificial Intelligence:

1. AI should benefit people and the planet by fostering inclusive growth, sustainable development, and well-being.

2. AI systems should be designed with respect for the rule of law, human rights, democratic values, and diversity, and should include appropriate mechanisms such as allowing human intervention where necessary to ensure a fair and equitable society.

3. There must be transparency and accountable disclosure around AI systems to ensure that people understand their outcomes and can challenge them.

4. IA systems should operate robustly and safely throughout their life cycle and potential risks should be continually assessed and managed.

5. Organizations and individuals who develop, deploy, or operate AI systems must be held accountable for their proper functioning, based on the principles described above.

Based on these principles, the OECD also provides five recommendations to governments:

1. Facilitate public and private investment in research and development, with the aim of stimulating innovation in Artificial Intelligence in a secure and reliable manner.

2. Promote accessible AI ecosystems with digital infrastructure and technologies, and mechanisms for sharing data and knowledge.

3. Ensure a policy framework that opens the way for the deployment of reliable AI systems.

4. Train people with skills needed for AI and support workers for a just transition.

5. Cooperate across borders and sectors to advance the responsible stewardship of trusted AI.

2.- MACHINE LEARNING.

As we mentioned, AI has burst into all scenes of society, finance has not been the exception, in fact, it has probably been one of the areas where it has been most developed and used in recent years, economic and financial predictions are based on data and the subsequent analysis and interpretation of these. A basic tool for the operation of AI is the so-called "machine learning", let us talk about it:

It is an automatic learning system able to analyze millions of data to detect trends, correlations, and forecasts.

It is a technology that allows a series of operations to be made automatic to reduce the need for human intervention. This can be a great advantage in controlling a large amount of information in a much more effective way.

What is called learning, is the ability of the system to identify many complex patterns determined by many parameters.

In other words, the machine does not learn by itself, but through an algorithm in its programming, which is modified by constant input of data at the interface, and can thus predict future scenarios or automatically take action according to certain conditions. Since these actions are performed autonomously by the system, learning is said to be automatic, without human intervention.

HOW DOES MACHINE LEARNING WORK?

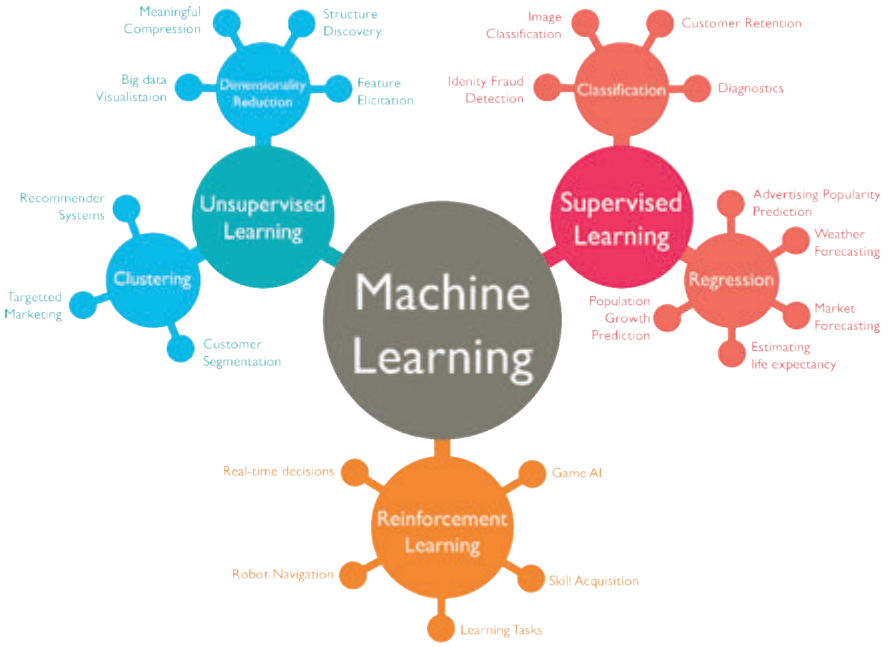
In classical computing, the only way to get a system to do something was to write an algorithm that defined the context and details of each action.

In contrast, the algorithms used in the development of Machine Learning do much of these actions on their own. They obtain their own calculations based on the data collected in the system, and the more data they obtain, the better and more precise the resulting actions will be.

Computers program themselves, to some extent, using such algorithms. They function as engineers that can design new computer paths, in response to information provided to them through their interface or other means. Every new piece of data is converted into a new algorithm, and the more data, the more complex and effective the computation can be.

TYPES OF LEARNING

There are three main types of Machine Learning:



1. Supervised learning:

This type of learning is based on what is known as training information. It trains the system by providing it with a certain amount of data by defining it in detail with labels. For example, providing the computer with photos of dogs and cats with tags that define them as such.

Once you have been given enough of this data, you can enter new data without the need for tags, based on different patterns you have been recording during training. This system is known as classification.

What distinguishes Supervised Learning is that different examples are used from which to generalize for new cases.

2. Unsupervised learning:

In this type of learning, no true values or labels are used. These systems are aimed at understanding and abstracting patterns of information in a direct way. This is a problem model known as clustering. It is a training method more like the way humans process information.

3. Learning by reinforcement:

In the technique of learning by reinforcement, systems learn from experience. The behaviour of an autonomous car can be observed as an example. When the vehicle makes a wrong decision, it is penalized, within a value registration system. Through such a system of rewards and punishments, the vehicle develops a more effective way of performing its tasks.

It is a technique based on trial and error, and the use of reward functions that optimize the behavior of the system. It is one of the most interesting ways of learning for Artificial Intelligence systems, since it does not require the introduction of a great amount of information.

According to the Greenwich consulting firm, more than 50% of the companies in the market will use automatic learning systems in the next two years. Investment funds and asset managers use them to reduce risk about what to buy, when to buy and for which clients.

3.- AI IN FINANCE.

The Australian futurist Brett King who is considered the most prominent expert in banking innovation states through his books that "banking 4.0 is the future of financial services", and is not far from reality, new technologies have put the user at the center and this has taken control of their finances from their mobile devices, the financial environment has experienced substantial advances in technology and digitalization and these seem not to stop.

Artificial intelligence could generate operational efficiencies in areas from risk management and trading to insurance underwriting and claims. While some applications are more relevant to specific sectors within financial services, others can be exploited generally.

Banks have been using machine learning to detect fraud and computer attacks, price a product or analyze the profile of outliers when granting credit.

RISK MANAGEMENT

Artificial intelligence has proven to be valuable when it comes to security and fraud detection. Traditional methods of fraud detection include computers that analyze structured data against a set of rules. For example, a given payment company might set a threshold for wire transfers at $15,000, so that any transaction above that amount would be flagged for further investigation. However, this type of analysis produces many false positives and requires much additional effort. Perhaps even more significantly, cybercrime scammers change their tactics frequently. Therefore, the most effective systems must continually become smarter.

THE SUCCESS OF PAYPAL WITH ARTIFICIAL INTELLIGENCE AND FRAUD DETECTION

Let's take PayPal, the payment giant, and its advanced fraud protocols as an example. Because of its scale and visibility, PayPal "has a big target on its back." It processed $235 billion in 2015 out of four million transactions for its 170 million customers. However, PayPal has been able to increase security by leveraging machine learning technology. In fact, PayPal's fraud is relatively low at 0.32% of revenue, a much better amount than the 1.32% normally seen by merchants.

Previously, PayPal used simple, linear models. Today, their algorithms extract data from a customer's purchase history and review patterns of probable fraud stored in their growing databases. While a linear model can consume 20-30 variables, machine learning technology can sort through thousands of data points. These enhanced capabilities help PayPal distinguish innocent transactions from suspicious ones.

Regulators also use artificial intelligence to detect possible "catastrophic events in the markets, such as the 2008 bankruptcy wave," says the CFTC, the U.S. agency that regulates the futures and options markets.

Vasar Dhar, professor and researcher at NYU Stern University and manager of a hedge fund, believes that automatic systems are safer than those used by humans, since the latter are more exposed to panic and mass effects. "Humans don't always make the best decisions. In the long run, machines do better," he says.

TRANSITION TO TRUE AI

For years, investment management companies have relied on computers to handle commerce. About 1,360 hedge funds, representing 9 per cent of all funds, rely on large statistical models built by data scientists who often have doctorates in mathematics (also known as "quantum"). However, these models use only historical data, are often static, require human intervention, and do not work as well when the market changes. As a result, funds are increasingly migrating to true artificial intelligence models, which can not only analyze large volumes of data, but also continue to improve themselves. Let’s take PayPal, the payment giant, and its advanced fraud protocols as an example. Because of its scale and visibility, PayPal "has a big target on its back." It processed $235 billion in 2015 out of

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A recent study by investment research firm Eurekahedge tracked the performance of 23 hedge funds using AI from 2010-2016, where they were able to see that they outperformed those managed by more traditional quantum analysts and general hedge funds.

IMPLICATIONS FOR TRADERS AND ANALYSTS.

It will be interesting to see how AI will affect the financial labor market. Its effects are already evident in some of the major banking institutions. In 2000, Goldman Sach's US fixed income trading office at its New York headquarters employed 600 traders buying and selling shares. Today it has only two stock traders with machines doing the rest of the work. Daniel Nadler, CEO of Kensho, says, "In 10 years, Goldman Sachs will be significantly smaller on the payroll than it is today." And as for quantum analysts, they may notice that their skills are in less demand at investment management companies.

4.- TRADING ROBOTS.

Remember that the world of Forex would not exist without the advance of technology, since the operations that are carried out in the world are 100% electronic. Now, technology has reached such a point that many of the things you see today seem like science fiction, how has that affected the Forex world? From robot trading to what we see today about bullish or bearish signals are a clear example of this.

Whether we are talking about artificial intelligence or machine learning in finance, we will find that the most widely used tool by today's traders are automatic trading robots.

As you gain experience you will find that trading is very versatile due to the different trading styles, strategies and systems that can be used.

WHAT IS AN AUTOMATIC TRADING ROBOT

One of the features of Forex is the division between traders who wish to trade manually and those who wish to use automatic trading.

This trading requires detailed research to find the right software and algorithms to make the right trades.

Sitting back and letting a device do the work for you can be a temptation. And this is where the automated forex robot comes in.

A Forex robot is a computer program based on a set of currency trading signals that helps define whether to buy or sell a currency pair at a given time.

It is an automatic trading software that places orders on the stock exchange, according to the programming code given to it.

Automated trading robots are available 24 hours a day, 7 days a week, depending on the strategy written in your source code.

DO AUTOMATIC TRADING ROBOTS REALLY WORK?

Forex traders want to use automatic robots just because they expect to get easy money from the Forex market without having to spend a lot of personal time, or to trade manually. Those who use robots must find a good currency pair and the perfect time frame to maximize their profits.

Some automated Forex robots are capable of scanning numerous charts in a way that humans physically cannot. In addition, robots are developed with particular parameters needed to make trading decisions. With previously implemented signals, they determine when it is appropriate to trade or, conversely, to wait.

The best Forex robots suggest solutions to find profitable trades even in unstable markets when the current direction of trends is not clear.

These robots will always follow the best trend to increase profits and perhaps eliminate the possibility of losses.

Trading against the trend will lead to one loss after another. However, trading in favor of the trend will increase your profits, no matter what strategy or robot you use.

FOREX ROBOT IN OPERATION

It is very easy for an automatic trading robot to execute the lines of code that the programmer has inserted.

Like any computer program, a Forex robot is based on lines of code written in the form of a specific programming language.

For example, if a trader hires a programmer to create a custom trading robot based on

- A position paper with two short-term moving average crosses

- A trend filter with a simple long-term moving average

The encoder will write the following conditions in the robot code:

Search for a buy signal if the price is above the long-term simple moving average.

2.Open a buy position if the first condition is met and the two short term moving averages cross upwards.

3.Look for a sell signal if the price is below the long-term simple moving average.

4.Open a short position if the third condition is met and the two short term moving averages cross down.

These conditions should be converted to machine learning so that the robot is ready to predict and operate autonomously.

Many people want to use an automatic trading robot because they expect to make money quickly and easily in the forex market.

However, it must be understood that Forex robots are developed with particular parameters needed to make quick trading decisions, since, using precise signals, they determine when it is appropriate to trade or not to trade.

This means that, if conditions change, the robot in charge of interpreting the market in a certain way will probably have more difficulties to be profitable and this is not insignificant.

As you may have understood, it is important to note that all forex robots trade in a certain market configuration and have difficulty adapting to changing trends.

So, we can find robots that work very well in a trend market but lose a lot in a range market and vice versa.

The best Forex trading robots will have to make stops to deal with unstable markets or when the trend is not clear. Most will follow the trend to increase profits. But you should not forget that trading against a trend can lead to many losses.

To choose the right trading robot, you must first decide on a working strategy and consider. Do not be fooled by a percentage of large and fast profits - this could be the result of an aggressive Robot setup and, in the future, may make your money unsafe. Follow your trusted trading strategy, otherwise the Robot could easily disappoint you. There are many different tips for choosing "the right one" but remember - the only way to see if the Robot is working properly is to test it.

THE BEST FOREX ROBOT IN THE LAST 12 MONTHS

The two best Forex strategies are the Worthy FX and the Piphiker EA. Both forex strategies performed extremely well with an average of 50% profit in the last six months. Even Warren Buffet would be impressed.

The good thing about these two strategies is that they are opposite of each other. When the Piphiker EA builds a grid with hedging trades, the Worhty FX does not often trade, but when it does, it can easily get 25% on a single trade. Therefore, many clients opt for a combined account where they trade both EAs at the same time. This works from around $6000.

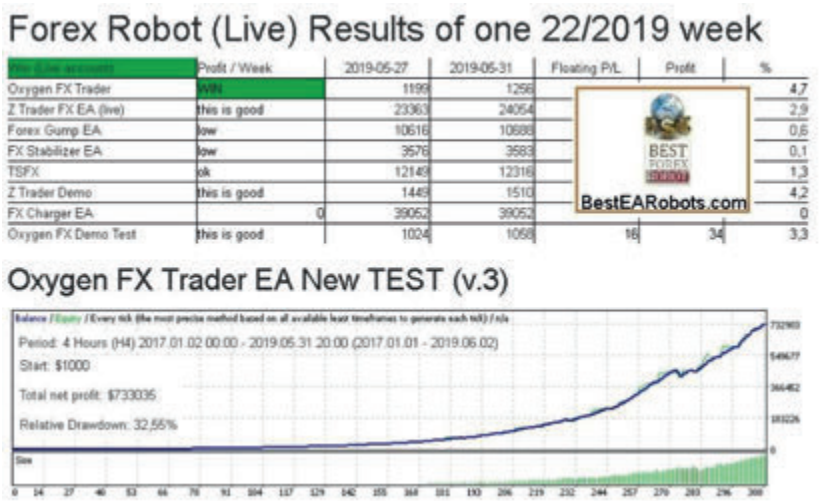
Worthy FX

is the best forex robot for those traders who like sophisticated money management settings. Basically, this algorithm operates a few times a month and only quotes the EURGBP pair. This is a smart choice, as this currency pair goes back a lot and shows good volatility. Around the market close, this expert advisor enters limit orders according to the principle of a swing strategy. The TP profit is set at 300 pips and the SL is trailing stop. So the bigger the move, the higher your profit.

Piphiker EA

is the opposite. It starts operating almost immediately from the moment you start it. Obviously, many traders are attracted to this system, simply because this is what most people expect from automatic trading. In addition to building a grid, this ADP (like many grid strategies) uses hedging to make the system more stable. The trick with this strategy is to choose pairs that are varying. Currently the most traded pair should be the GBP. Brexit is the perfect situation for range in GBP related pairs.

BENEFITS OF AUTOMATED TRADING WITH ROBOTS.



Auto-trading offers the following benefits:

- Trades are executed at the best possible prices.

- Trade order placement is instantaneous and accurate (there is a high probability of execution at the desired levels).

- Trades are timed correctly and instantly to avoid significant price changes.

- Reduced transaction costs.

- Simultaneous automatic checks in multiple market conditions.

- Reduced risk of manual errors when trading

- Automatic trading can be tested using available historical and real-time data to see if it is a viable trading strategy.

- The possibility of human error based on emotional and psychological factors is reduced

STRATEGIES WITH ROBOTS AND IA.

As we have mentioned before robots cannot be self-programmed, so it will be the job of a specialist to provide it with parameters and strategies that can then be operated by the robot automatically. Any strategy for automated trading requires identifying a profitable opportunity in terms of better profits or cost reduction. The following are common trading strategies used in automatic trading that can be applied to any type of financial instrument whether in the stock market or in the currency market and will be of value and reference for the programming of your robot.

Trend Monitoring Strategies

The most common algorithmic strategies follow trends in moving averages, channel breakdowns, price level movements and technical indicators. These are the easiest and simplest strategies to implement because they do not involve making price predictions or forecasts. Operations are initiated based on the emergence of desirable trends, which are easy and straightforward to implement through algorithms without going into the complexity of predictive analysis. The use of 50-day and 200-day moving averages is a popular trend-following strategy.

Arbitration opportunities

Buying a dual-quoted share at a lower price in one market and simultaneously selling it at a higher price in another market offers the price differential as a risk-free profit or arbitrage. The same operation can be replicated for stocks and futures instruments, as there are price differences from time to time. Implementing an algorithm to identify such price differentials and conducting trades efficiently allows for profitable opportunities.

Index funds rebalancing

Index funds have defined rebalancing periods to bring their holdings in line with the respective benchmarks. This creates profitable opportunities for algorithmic traders, who capitalize on expected trades that offer gains of 20 to 80 points depending on the number of stocks in the index fund just prior to rebalancing. Such trades are initiated through algorithmic trading systems for timely execution and best prices.

Trading range (mean reversion)

The strategy of reversion to the average is based on the concept that the high and low prices of an asset are a temporary phenomenon that periodically returns to its average value. Identifying and defining a price range and implementing an algorithm based on it allows transactions to be made automatically when the price of an asset enters and leaves its defined range.

Volume Weighted Average Price (VWAP)

The volume-weighted average price strategy splits a large order and releases smaller portions of the asset to the market using historical stock or currency-specific volume profiles. The goal is to execute the order close to the volume-weighted average price.

Time-Weighted Average Price (TWAP)

The time-weighted average price strategy divides a large order and releases smaller portions of the order into the market using time intervals divided equally between the start and end time. The goal is to execute the order close to the average price between the start and end times, thus minimizing the impact on the market.

Percentage of volume (POV)

Until the trade order is completed, this algorithm continues to send partial orders according to the defined participation rate and according to the volume traded on the markets. The "step strategy" sends orders to a percentage of market volumes defined by the user and increases or decreases this participation rate when the stock price reaches user-defined levels.

Implementation deficit

The implementation deficit strategy aims to minimize the cost of order execution when trading in the real-time market, thus saving the cost of the order, and benefiting from the opportunity cost of delayed execution. The strategy will increase the target participation rate when the stock price moves favorably and decrease when the stock price moves negatively.

Other algorithms.

Beyond the usual commercial algorithms, there are some special kinds of algorithms that try to identify "events" on the other side. These "detection algorithms", used, for example, by a market maker on the selling side, have built-in intelligence to identify the existence of any algorithm on the buying side of a large order. Such detection through algorithms will help the market maker identify large opportunities and allow them to benefit from completing orders at a higher price.

As we can see the implementation and use of artificial intelligence through the programming of robots can become one of the most useful tools for the trader, especially when it comes to minimizing possible errors and market risks, it is important to note that this technology is still under development and that human skill will always be indispensable for its programming so you should never stop trusting your own instinct.