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### ABSTRACT

The Artificial Intelligence is growing and covering various aspects of our daily life. The idea seems to be very complex. It seems that a program cannot be developed using our home PC. But believe me, it's not that difficult. Let us try to understand what the neural networks are and how they can be applied in trading.

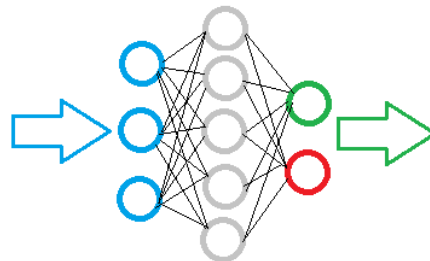
Artificial Neural Networks can be used in forex Currency Trading, for finding or predicting the next possible movements. We know that Artificial Neural Networks involves study of neurons in the human brain, sometimes called as biological network. ANN is based on connections of nodes, units called as artificial nodes or neurons.

Neural network is an entity consisting of artificial neurons, among which there is an organized relationship. These relations are similar to a biological brain.

**KEYWORDS:** ANN, Artificial Neural Networks, Forex trading.

### 1. INTRODUCTION

In the above diagram simple neural network is shown all the circles indicates the neurons, where as blue colored circle indicates input neuron(acceptor), gray colored circles indicates hidden neurons(processor), green and red colored circles indicates output neurons(display)



According to the above diagram the entire network is created using the set of neurons that has several elements of input, several elements of processing called as hidden layers, and several outputs. Now take a look at the above diagram.



When we give some input values and the expected answer will be true or false, and same can be applied in Trading Decision, that means whether to invest or take buy trade.

The initial information is input to the input neuron layer, then it is processed and the processing result serves as the source information for the next layer neurons. The operations are repeated from one layer to another until a layer of output neurons is reached. Thus, the initial data is processed and filtered from one layer to another, and after that a result is generated.

Depending on the task complexity and the created models, the number of neurons in each layer can vary. Some network variations may include multiple hidden layers. Such a more advanced neural network can solve more complex problems. However, this would require more computational resources.

Therefore, when creating a neural network model, it is necessary to define the volume of data to be processed and the desired result. This influences the number of required neurons in the model layers.

If we need to input a data array of 10 elements to a neural network, then the input network layer should contain 10 neurons. This will enable the acceptance of all the 10 elements of the data array. Extra input neurons will be excessive.

The quality of output neurons is determined by the expected result. To obtain an unambiguous logical result, one output neuron is enough. If you wish to receive answers to several questions, create one neuron for each of the questions.

Hidden layers serve as an analytical center which processes and analyzes the received information. Therefore, the number of neurons in the layer depends on the variability of the previous-layer data, i.e. each neuron suggests a certain hypothesis of events.

The number of hidden layers is determined by a causal relationship between the source data and the expected result. For example, if we wish to create a model for the "5 why" technique, a logical solution is to use 4 hidden layers, which together with the output layer will make it possible to pose 5 questions to the source data.

## 2. MATERIALS AND METHODS

### Structure of an Artificial Neuron

We have considered the neural network structure, let us move on to the creation of an artificial neuron model. All mathematical calculations and decision making are performed inside this neuron. A question arises here: How can we implement many different solutions based on the same source data and using the same formula? The solution is in changing the connections between neurons. A weight coefficient is determined for each connection. This weight sets how much influence the input value will have on the result.

The mathematical model of a neuron consists of two functions. The products of the input data by their weight coefficients are summarized first.

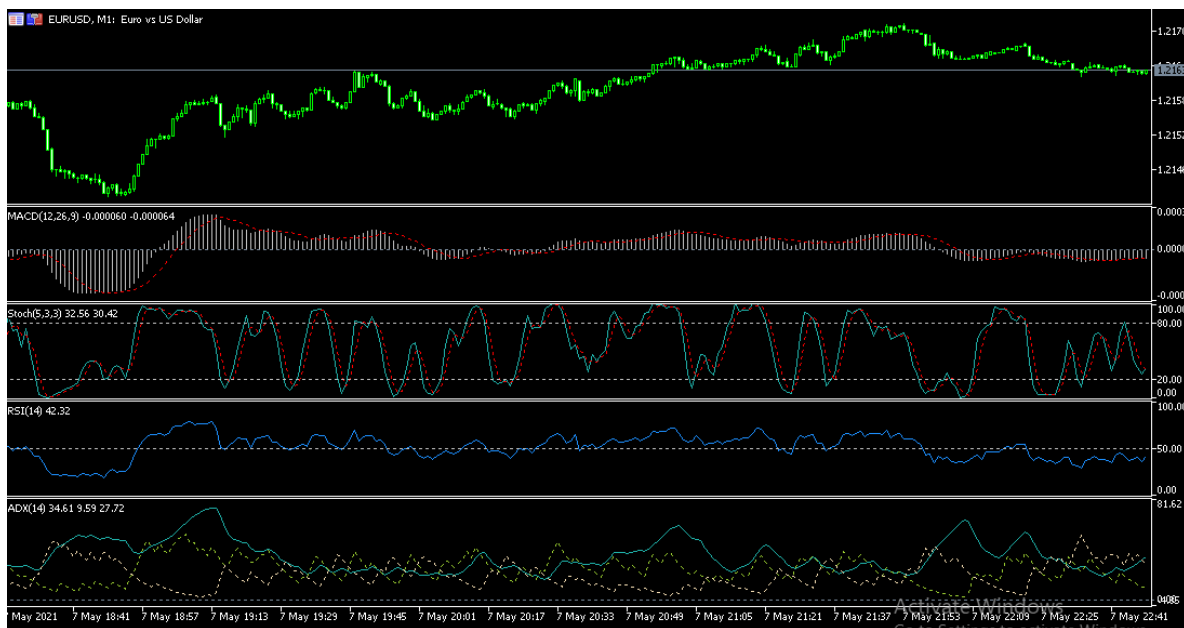
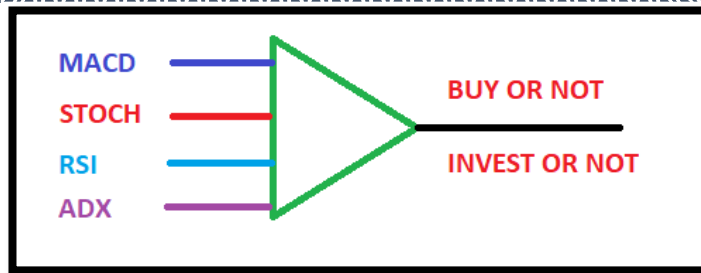
$$S = \sum_{i=0}^n w_i p_i$$

based on the received value, the result is calculated in the so-called activation function. In practice, different variants of the activation function are used. The most frequently used ones are as follows:

- Sigmoid function — the range of output values from "0" to "1"

Here we can make use of sigmoid function and use some of the following technical indicators. after applying indicators we will take the value either 1 or 0 from different indicators and assign some weights to them.

To understand this reader must have some knowledge about Moving Average Convergence Divergence, Stochastic Oscillator, Relative Strength Index, Average Directional Index



### 3. RESULTS AND DISCUSSION

S.N.	MACD		STOCHASTIC OSCILLATOR		RSI		ADX	
	if > 0 (zero)	1	%k > %d	1	If >50	1	+DI>-DI	1
2	if < 0 (zero)	0	%k < %d	0	If <50	0	+DI<-DI	0

In above image for clear understanding I have taken a technical chart of EURUSD Currency Pair and applied four technical indicators respectively, MACD, STOCHASTIC, RSI, ADX. In consideration More than 50%percent occurrences of 1 in the output the decision is considered as Invest or Take a Buy Trade other wise Opposite Position that is Sell can be Done if More than 50% Percent Occurrences of 0 (Zero's)

### 4. CONCLUSION

In the Conclusion one can use the neural networks of the four technical indicators to predict or forecast the stock market as well as currency market. Trading Accuaracy can be increased upto 70% to 80 % for trading Decision

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### 5. ACKNOWLEDGEMENTS

In this paper the trading terminology according to the movement of stock market, the retail trader or investor make comfortable decisions on buying and selling the stocks.

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