A COMPARATIVE STUDY: PERFORMANCE AND OPTIMIZATION OF NEURAL NETWORKS IN BLOOD CELL DATASETS

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Abstract

Artificial Neural Networks (ANN) generally referred to as Neural Networks are the statistical model,it is mainly focused on the biological neuron for the information or signal processing. A neural network is a dynamic system consisting of a community of interconnected neurons that offers a very exciting solution to complex problem solving and other applications that can play a crucial role in today's technology. In this paper we are using various process likepattern recognition, prediction and optimization of blood cells is usually undertaken to help clinicians determine a wide variety of hematics. Pathologies identifydengue, anemia, diabetes and other related diseases.

*Keywords:*Artificial Neural Network (ANN),Pattern Recognition,Prediction, Feedback Network

I.INTRODUCTION

Blood analysis has been an important field for quite a long time. With developments in the field of Computer science and informatics, it was thought that we can use this normal way of thinking blood cell process to develop some System of neural network.This which sound hyperbolic to suggest that the existing techniques of a whole research area are rapidly replaced by a new discovery, as if it were struck by a 'tsunami' science. But this devastating terminology is sufficient to explain Deep Learning 's meteoric rise over the past several years-an increases marked by dramatic improvements over predominant approaches to the toughest problems.

Many tasks requiring intelligence or pattern recognition are exceedingly difficult to automate, but seem to be quite easily done by people. For example, human beings perceive different objects and make sense of the vast amount of visual details in their environment, which obviously needs very little effort. It is fair that computer systems which attempt similar tasks will benefit from these are often referred to as "Neural Nets," "Parallel Distributed Processing Networks" and "Connectionist Networks.We recall the theory that a "Directed Graph" consists of a set of "Nodes" (vertices) and a set of "Connections" (edges / links / arcs)

connecting node pairs. Each node performs some simple computations in a neural network, and each connection transmits a signal from one node to another, marked with a number called the "Connection Strength" or "Weight," indicating the extent to which a signal is amplified.

Working of ANN: A neuron is the essential processing element of a neural network. This building block of human consciousness includes a few general capacities. A biological neuron basically receives inputs from other sources, combines them in some way, performs a generally nonlinear operation on the outcome, and then outputs the final outcome.

There are several variations in this specific form of neuron within humans, which further complicates man's attempts to electrically Replicating thought pattern. However, all-natural neurons have the same 4 basic components. By their biological names, these components are known-dendrites, soma, axon, and synapses.The other sections that use neural networks revolve around the various forms these neurons can be Clustered together. This clustering takes place in the human mind, so that knowledge can be interpreted in a complex, collaborative, and self-organizing manner. Biologically, the neural networks are formed from microscopic components in a three-dimensional universe.Neural networks presently are the simple clustering of primitive artificial neurons. This clustering comes about by creating layers that are then connected to each other. The other part of the engineering networks is how these layers connect to solve real world problems.

This entire process: Input, Processing, comparing output with correct response, and adjusting link strengths is called a 'back-propagation cycle,' or sometimes just an 'iteration.' The net will then be presented with another image and its answer will be compared with the correct answer, the relation strengths being changed where appropriate.This method may also take iterations to hundreds or thousands.

Attributes of ANN: Basically, computers are good in calculations which primarily take the process of inputs and then give the result on the basis of the calculations performed on unique algorithms programmed in the software but ANN enhance their own the more rules, the better the choices they make. Basically, the characteristics are those that should be represented in the following diagram.
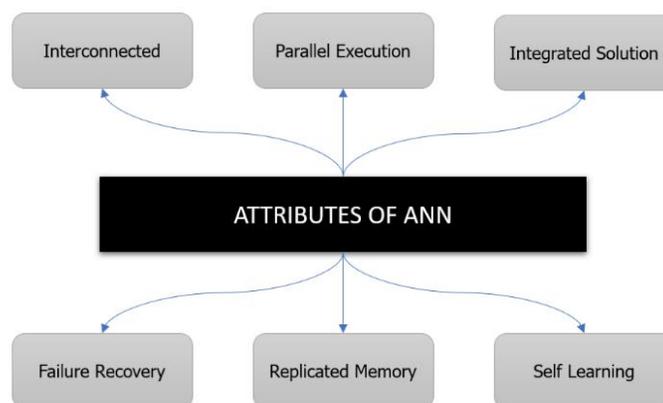

Fig.1 Attributes of ANN

Learning Process of ANN: The Learning procedure of Artificial Neural Network Classified in to two patterns.

Associative mapping in which the network learns to generate a particular pattern on the set of input units if the set of input units uses another particular pattern.

Detection of regularity in which units learn to respond to specific properties of the input patterns. While the network stores the relationships between patterns in associative mapping, each unit's response has a particular 'meaning' in regularity detection. This kind of learning mechanism is essential to the discovery of features and the representation of knowledge.

Each neural network possesses information found in the values of the weights of connections. Modification Information stored as a function of experience in the network implies a learning rule for changing the values of the experience Forces.

Applications of ANN:

Medical: Artificial Neural Networks (ANN) are currently a hot medical research area, and are thought to be the biomedical systems will receive extensive application in the next few years. At the moment research is predominantly Modeling parts of the human body and disease recognition from different scans.

Data Mining: Discovery from vast quantities of data, of relevant patterns (knowledge).

Expert Systems: A computer decisionmaking software that simulates a human expert's reasoning process.

Fuzzy Logic: Uncertain reasoning theory.

Artificial Life: Evolutionary Computation, Intelligence Swarm.

Artificial Immune System: A biological immune system-based computer.

II. LITERATURE REVIEW

O.A. Kurban investigated an artificial neural network are non-linear mapping systems which have a loosely defined structure based on concepts found in biological nervous systems. From this, a typical real neuron has a branching dendritic tree, which collects signals from many other neurons in a limited area and cell body that integrates the collected signals and generates a response Manages metabolic functions); and along the branching axon, which distributes the response through contacts of many other neurons with dendritic trees. Each neuron 's response is a relatively simple non-linear function of its inputs, and is largely determined by the connection strengths from its inputs. Despite the relative simplicity of the individual components, structures with lots of neurons.By comparison, "neurons" can be called the processing nodes performance depends solely on the information available locally at the node, either internally stored or arriving through the weighted connection unit receives input from several other nodes and transmits to other nodes its output. A single processing element is not very effective by itself; it produces a scalar output with A single number value, a simple nonlinear function of its inputs. The control of the system arises in an

adequate way from the combination of many units. A network uses various functions by changing the topology of the link and the values of the connecting weights. Complex functions can be implemented by linking the units with corresponding weights.It has been shown that any function satisfying certain broad constraints can be approximated with arbitrary accuracy by a sufficiently large network with the appropriate structure and property weights chosen. The model represents a drastically simplified approximation of actual nervous systems. The aim is to capture the main features that are important in the information processing functions of real networks.Artificial NN consists of simple, highly interconnected processing units called neurons, each performing two functions, namely aggregating its inputs from other neurons or the external environment and generating an output from aggregated inputs.Through this simple structure, it has been shown that neural networks can approximate most continuous functions to any degree of accuracy, by choosing an appropriate number of neuron units.

III. BIOLOGICAL INNOVATION

Human brain is made up of a network of neurons that are coupled with receptors and effectors. Receptors are called "dendrites" and effectors are called "axons".Fig. shows that the dendrites collect the signals from many other neurons in a limited area; a cell body or soma that integrates collected signals & generates a response signal & along branching axon that distributes the response through contacts with dendrite trees of many other neurons.
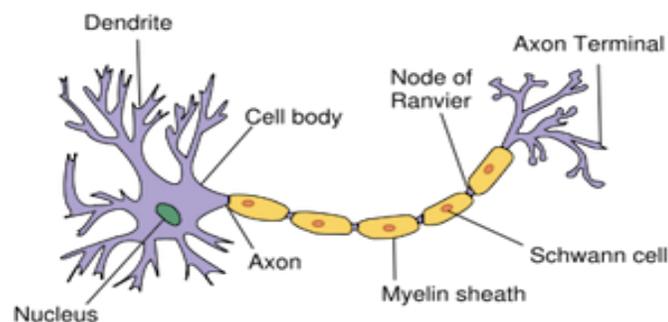
Fig 2: Biological Neurons

IV.ANN METHODOLOGY

ANNs are essentially massive parallel computational models which mimic human brain function. An ANN is made up of large numbers of simple processors connected by weighted connections. By comparison, "neurons" can be called the processing nodes node performance depends solely on the information available locally at the node, either internally stored or arriving through the weighted nodes. Each unit receives input from many other nodes and transmits their output to other nodes. A single processing factor by itself isn't very effective and it produce a scalar output with single numerical value, which is a simple non-linear function of its inputs. An error is composed from the difference between the desired answer and the output of the device. This error knowledge is fed back to the machine, and continuously updates the system parameters (the learning rule). It repeats the process until the result is appropriate. From this definition it is clear that the output is very much dependent on the data.

V.PROPOSED METHOD

Investigator have been refining the algorithm using some in the well-known classification in machine learning. In the proposed approach the most discriminative features were effectively chosen. It retrieves the high precision rate for identification of the disorders. proposed a morphological method based on blood images for identification of WBCs. The proposed method achieved a higher accuracy of more than 95% since it combines both broad and phantom features. developed a deep learning algorithm-based method to automatically classify the WBCs. As a Deep Learning (DL) algorithm, Logistic Regression algorithm was used due to its able to handle a large number of images.

VI.CONCLUSION

In this study, we identify artificial neural network is emerging technology, it can be applied for various data analysis applications like that prediction, Pattern recognition. The network is able to identify thedataset using different experimental methods.The Neural network can capable of parallel processing. Our methods classify medical images based on attributes and we can achieve high performance and optimized result for identifying input.

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