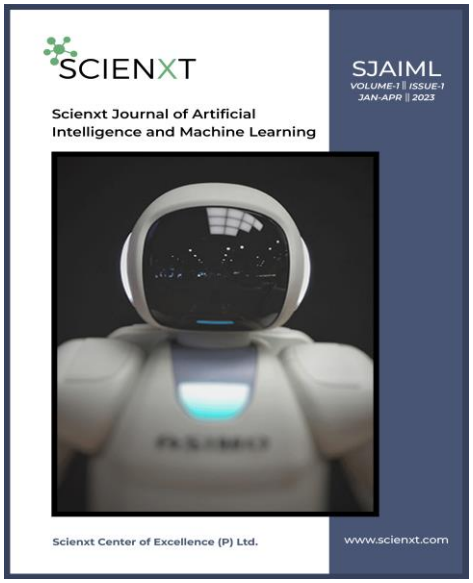

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Survey Paper on Artificial Neural Network and its applications

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Abstract:

The Artificial Neural Network (ANN) are simplified models of the neurons of the human brainto make computers useful. This can be helpful to solve the real-world problems. This creates intelligent data and some evaluation techniques like pattern recognitions and classifications. We can make the systems more simple, distributed and robust processing. ANN are parallel implementations of non-linear and static and dynamic systems. ANN can solve the hard problems using high degree of connectivity that gives neurons high computational power by the massive parallel structures. The different and explosive developments of the ANNapplications is shown throughout this paper. ANN are used in the number of applications suchas speech recognition, image recognition, machine translation and medical diagnosis, characterrecognition, signature verification, human face recognition, neural networks for data-intensiveapplications, Neuro-Fuzzy Models. Other than computer science it has wide applications in Mechanical, Electrical and Civil Engineering.

Keywords:

Artificial, Neural, Network, Generalizations, Translation, Recognition.

1. Introduction:

Artificial Neural Networks (ANN) are brain functions based on algorithms. They are used to model complex patterns and some forecast issues. ANN is the learning methods which came from the concepts of Human Brain Networks. The development of an Artificial Neural Network is the outcome of the model of Human Brain Working. The working of Biological neural networks and the working of the ANN are similar but not identical. ANN can accept both numerical and structured data. CNN(Convolutional Neural Networks) and RNN (Recursive Neural Networks) accept non-numeric and unstructured data in the form of images, speech and texts.

2. What is the Neural Network:

Neural Networks represent the working of Human Brains. They allow the computer programs to understand the patterns of different problems and to solve the common problems in the fields of Artificial Intelligence, Deep Learning and Machine Learning.

Neural Networks or Simulated Neural Networks belong to Machine Learning. They are at the center of Deep Learning Algorithms. The structure and name are derived from the Human Brains. Biological Neurons' signal patterns and the message transmission method is used in Neural Networks.

3. What is an artificial Neural Network:

Artificial Neural Networks term is derived from the Neurons structures of the Human Brain. The neurons of the human brain are interconnected with each other similarly the Artificial Neural Networks also have Neurons which are connected at various layers. The Artificial Neurons are called as Nodes. Figure (1) shows artificial neural network system

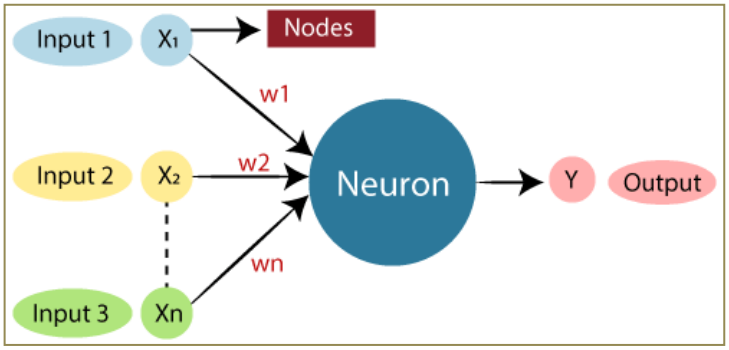

Figure.1: Artificial Neural Network

4. Survey:

Various research articles were studied for the survey, Studied and the following findings were concluded:

4.1. Survey No: 1

Paper Title: APPLYING ARTIFICIAL NEURAL NETWORKS IN CONSTRUCTION

E3S Web of Conferences 143, 010

https://doi.org/10.1051/e3sconf/2020143010 ARFEE 2019

Author/s: Anna Doroshenko, Moscow state university of civil engineering,

Application: Civil Engineering

Conclusion: ANN works in construction Industries like energy efficiency and energy consumption. It also works in material construction, structural analysis, BIM technologies and smart cities.

4.2. Survey No: 2

Paper Title: ARTIFICIAL NEURAL NETWORKS AND THEIR APPLICATIONS

National Conference on 'Unearthing Technological Developments & their Transfer for Serving Masses' GLA ITM, Mathura, India 17-18 April 2005

Author/s: Nitin Malik Department of Electronics and Instrumentation Engineering, Hindustan College of Science and Technology, Mathura, India

Application: Multiple Areas of Applications

Conclusion: ANN is used in Alarm processing, Harmonic source monitoring and Eddy current analysis. It also works for nuclear power plants.

4.3. Survey No: 3

Paper Title: ARTIFICIAL NEURAL NETWORKS-BASED MACHINE LEARNING FOR WIRELESS NETWORKS: A TUTORIAL ARTIFICIAL NEURAL NETWORKS-BASED MACHINE LEARNING FOR WIRELESS NETWORKS: A TUTORIAL

IEEE COMMUNICATIONS SURVEYS & TUTORIALS, VOL. 21, NO. 4, FOURTH QUARTER 2019

Author/s: Mingzhe Chen, Ursula Challita, Walid Saad, Fellow, IEEE, Changchuan Yin, Senior Member, IEEE, and Mérouane Debbah, Fellow, IEEE

Application: Wireless Network

Conclusion: Machine learning algorithms based on ANN can be used for solving wireless networking problems. In this Spiking and deep Neural network which are pertinent applications are considered.

4.4. Survey No: 4

Paper Title: An Asymetric-key Cryptosystem based on Artificial Neural Network

Author/s: Rafael Valencia-Ramos, Luis Zhinin-Vera, Gissela E. Pilliza and Oscar Chang

Application: Cryptography

Conclusion: ANN works to create public and private keys. It also works to make an auto-coder. The system used methods of randomization that is based on the user's secret key generation.

4.5. Survey No: 5

Paper Title: An Introduction To and Applications of Neural Networks

Author/s: Adam Oken

Application: Image Recognition

Conclusion: The machines use the data where they get training on. These trainings help them to learn and learning is endless. ANN are used for the tremendously complicated functions.

5. Conclusion:

Nowadays Artificial Neural Networks are able to solve different problems with the help of Nodes built, based on the structures of Human brain Neurons. ANN has a wide area of applications in different fields. Deep Learning and Machine Learning with the help of ANN have created good applications area in the fields of Medical, Education, Engineering and many more.

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