Title: **Application of Multi Layer (Perceptron) Artificial Neural Network in the Diagnosis System: A Systematic Review**

Author/s: Arti Rana. Arvind Singh Rawat. Anchit Bijalwan. Himanshu Bahuguna.

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Answer the following:

What is the problem being solved in the research?

They have a goal to solve a problem regarding medical diagnosis, specifically in the field of lung disease such as asthma, by using artificial neural networks and back-propagation learning algorithms.

What is the proposed solution of the author/s?

The proposed solution of the author/s is by the use of Multi-Layer Perceptron with a back-propagation algorithm to identify a prototype for the diagnosis. The back-propagation algorithm is training the algorithm that adjusts the connections within the artificial neural networks based on the difference between the predicted and actual output.

How did the author/s solve the problem/s? Provide a summary of the methodology

The authors did four things which are: collecting the data from patients with and without lung diseases, Multi-Layer Perceptron design to the artificial neural networks, train the neural network in which the data that have been collected will be fed to the artificial neural networks and with the help of back-propagation it will be used to compare the artificial neural networks output, if there are errors that will be encountered it will be propagated backward through the network, adjusting the connections (weights) between the neurons, and for the final step is the is diagnosis in which it will analyze the patient data and predict if she/he have a lung disease.

Provide a summary of the results.

The result in this study show that artificial neural networks, particularly Multi-Layer perceptron with a back-propagation learning algorithm, have been successfully applied in various medical fields, including cancer research, for tasks such as image processing, outcome prediction, treatment-response forecasting, diagnosis, and staging.

What is the conclusion of the author/s and provide your own recommendations on the paper.

The author/s concluded that the artificial neural networks , particularly Multi-Layer perceptron with a back-propagation learning algorithm, are a valuable tools especially when it comes to medical diagnosis, as they can handle complex patterns, are noise-insensitive, and can be trained that can be adapt to evolving medical issues. I would recommend conducting comparative studies with traditional diagnostic methods to evaluate the accuracy, efficiency and cost-effectiveness of the artificial neural networks based approach. I would also recommend multimodal data because of its comprehensive view that will combine the various data sources providing a richer picture of the patient's condition and this will also improve the accuracy.

Title: **The development of neural networks applications from perceptron to deep learning**
Author/s: Ahmad Jobran Al-Mahasneh. Sreenatha G. Anavatti. Matthew A. Garatt.
Date of Publication or Conference: October 12-14, 2017
Conference proceeding: 2017 International Conference on Advanced Mechatronics, Intelligent Manufacture, and Industrial Automation (ICAMIMIA)

Answer the following:

What is the problem being solved in the research?

The problem that is being solved is knowing and highlighting the evolution and current trends in neural networks. Based on the paper, they are examining how neural networks progressed from the simple perceptron to the realm of deep neural networks.

What is the proposed solution of the author/s?

For the proposed solution, the authors aim to review the historical development of neural networks - in which it gives a chronological perspective for the development, the types of neural networks, activation functions, learning types, and advancements in multi-neural network approach.

How did the author/s solve the problem/s? Provide a summary of the methodology

They solve the problem by tracing the historical milestones from the first neuron model in 1943 to the development of deep neural networks in 2006, discussing the feed-forward and recurrent neural networks and recurrent neural networks, activation functions, learning types which covered the supervised, unsupervised, and reinforcement learning methods. Also, reviewing the current applications like forecasting and classification, as well as trends.

Provide a summary of the results.

For the summary of the results; the neural network applications are now integral to various technological applications like control systems, voice and image recognition. The current trends in which utilizing evolutionary algorithms for network improvement. And advancing combinations of neural networks in modular fashion are explored for improved accuracy and handling complex systems.

What is the conclusion of the author/s and provide your own recommendations on the paper.

The author/s concluded that neural networks have become essential in modern life, with applications ranging from forecasting to data-driven control systems. They also talk about the trends that are evolutionary neural networks and deep learning as key areas for future development. I would recommend emphasizing the research on evolutionary neural networks for enhanced performance. Lastly, exploring the multi-neural network approach for tackling complex system challenges effectively.