RESEARCH ARTICLE OPEN ACCESS

TECHNIQUES OF ARTIFICIAL INTELLIGENCE IN POWER SYSTEM

J. Bharathi[1], Rohan R K[2], Mamatha B[3], Prajwal D[4]

[1]Asstistant Professor Department of Computer Science and Engineering, Brindavan College of Engineering

[2]Student Department of Computer Science and Engineering, Brindavan College of Engineering

[3]Asstistant Professor Department of Computer Science and Engineering, Brindavan College of Engineering

[4]Student Department of Computer Science and Engineering, Brindavan College of Engineering

---

Abstract -Today's world requires continuous and decisive power supply to work in a modern and advanced society. Artificial intelligence is a field that can be seen in human intelligence thoughts. Artificial intelligence is a combination of talented tasks, aging tasks, and formal tasks. The power supply system was used since the late 19th century, and it is one of the most important needs we have during our modern times. Power supply systems are used to store electrical and other energy for transmission and power saving for transmission. Artificial intelligence plays a serious role in a power system that solves various problems with planning, calculation, statistics, and prognosis. Since artificial intelligence has been developed in some areas, we were able to see the impact on the investment system. Artificial intelligence technology was common to solve various mathematical problems in power systems such as control, planning, and analysis. These techniques affect the difficult tasks facing the application with the latest major power systems with more connections. These technologies have been successful in many fields of power grid engineering.

Key Words:Artificial intelligence, Artificial neuron network, Genetic algorithm, Power supply system, Symbolic logic.

1.INTRODUCTION

The electrical grid may be a network of electrical components that usually supply, transmit and consume electricity. Energy system engineering may be an EE subset, and thus an electrical device connected to a system such as a generator, a motor and a transformer, in connection with the use of electrical energy. artificial intelligence.

In many cases, AI is understood as an intelligence generated by a machine or software, such as a robot or a computer program. This term often refers to intellectual processes, integration, identification from previous experience, such as thinking ability, t, sensation, integration, distinction, and preceding experience. Artificial General Intelligence (AGI) is a computer that allows you to work well with puzzle machine ingenuity or smart task. Power system AI has the outcome for the following.

Analysis of the energy system according to the prior art is complicated by the following. Complex, variables and hugeamounts of data used for calculation, diagnosis and research. Calculation and accuracy with comprehensive system data management. Modern power grids are working on limitations for eternal, energy consumption, and power transmission characteristics. This model requires only the minimum power and control function that can only be done by continuing the detailed system status more than necessary. Complex computer tools are the first tool to solve electrical network planning areas, performance, diagnostic and style complex issues. Among these computer tools, AI has significantly grown in recent years and is used in various fields of power systems. N, Style Select the corresponding word from the drop-down menu. The second problem with electrical network protection.

Problems are mainly caused by changes in security requirements (no incorrect role) transactions and behavioral speed and reliability requirements (no job). Safest tends to abuse or slow with relays (both algorithms and specific settings). Also, if the relay incorrectly functions, it takes other directions as soon as possible. The issues listed below reflect the current trend of power protection. There are two ways to reduce the problem of cognitive performance in old transfer systems. One of them is to develop and expand the scale available in a specific relay (e.g., integration of small channels for optical improvement and extension of CT). The second method supports what is already available, searching for new transmission systems, or applies some well-known principles with a single transfer to improve thunderstorms, or temporary CT and CVT Apply Error Corrections can be applied. Upgrade Error detection type using Ann area or self-configuration.Ann algorithms automatically search for security policies.

It takes time to always consider measurements that support the measurement. They are measured quickly or accurately. There is no complete digital measurement algorithm that eliminates this written mismatch between speed and accuracy. Use a data window with a long main algorithm. Or filter both background filters.

2. ARTIFICIAL NEURON NETWORK

(Ann) Artificial neural networks were biologically inspired by neurons that each neuron generates a single output as an input function to a set of sets of sets of set It is a system. The primary neurons are often adopted as processors that perform simple indirect operations for inputs that generate a single output. They are classified according to those functions (level and topology number: connection pattern,feed or repetition). Input layout: In addition to handling information and information, this data and information are processed to other units.

Hidden Layer: Hidden device nodes are hidden and hidden. These provide networks that have the potential to recognize whether to assign indirect issues.

Output Background: An output unit node that contains an amount taken into account by the housing. Processing speed. for no relevant knowledge of models is required. Which allows errors.

Ann is fast and strong:Recipient performance is required Size. The Input file is always generated• You cannot measure that ANN is designed to try to perform a specific task. It is difficult to guide other tasks without implementing neural networks. Author from many institutions. If your work has an author, use a collaboration structure where the full details of the author are listed under the title of the work, as shown at the top of this text. For most authors from the same institution, write a typical university and write the email address at the end in the same order as the authors in the author list. For most authors in most institutions, write the author`s name under the heading, then write the author`s email under that name. More information about additional authors can be added to the Author Information section at the bottom of the page. Paper body format

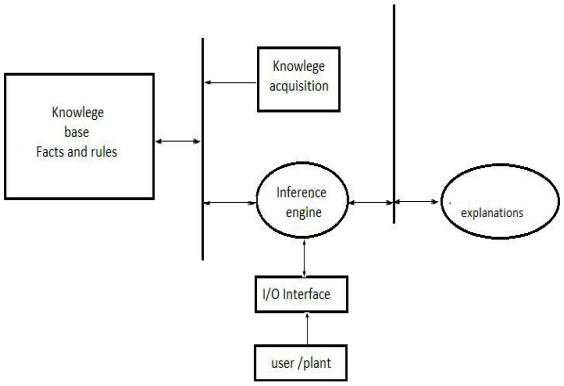

Fig -1: StructureofExpertSystem

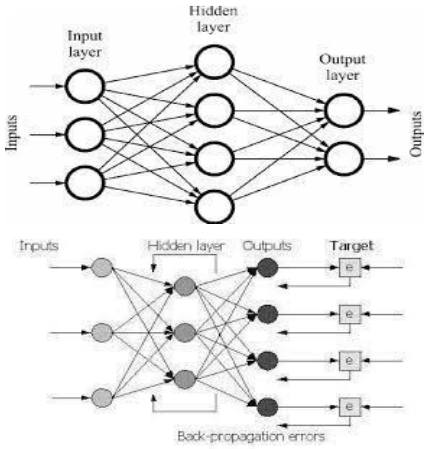

Fig-2: Architecture&TypicalstructureofANN

3. APPLICATIONS

Power system issues related to unspecified coding work for ANNs. ANNs are often especially helpful in problems, which require immediate results, such as those that work in real time. This is usually due to their ability to quickly produce results after receiving a set of inputs. How ANNs are commonly used in energy systems: As ANNs use biological environments and perform biological tests for global problems, problems in the production, transmission and distribution of electricity are often referred to ANNs in order to find the right solution. Given the constraints of an effective transmission and distribution system, the exact values of the parameters are usually determined. For example, the amount of inductance, strength and resistance within the transmission line is often calculated numerically by ANNs by taking into account various factors such as environmental factors, unequal conditions, and other potential problems. Also, cable resistance, power, and inductance are usually given as inputs, and a standard number of combined parameters is usually obtained. Thus, the effects of the appearance and proximity of electricity are often reduced to some extent.

3.1 GeneticAlgorithms(GA)

Genetic algorithm is a qualitative method that supports the study of survival and genetic engineering. What matters is that the most qualified person in the community has the best chance of surviving. Genetic algorithms provide a global approach that supports biological metaphors.

Genetic algorithm is often categorized into other development methods by:

1. The genetic algorithm worksonpredetermined flexible writing rather than specific variables.
2. Geneticalgorithmslookforrelevantpointsintermsof the number of potential solution points, not a single point.
3. Geneticalgorithmsuseinformationforthepurpose only.
4. Thegenetic algorithmuses the laws ofchancechange, not the rules that determine it

Thegeneticalgorithmisderivedfromthebasichuman genetic model. are the following sections:

1. Chromosomalrepresentationofvariancedefining confidentiality.
2. Numberoffirstpersons.
3. An experimental activity that plays a part of the environment, ranks individuals according to their suitability for their ability to survive.
4. Genetic operators determine the suspension of the replacement population generated by the process.
5. Parametersusedbygeneticalgorithm.
6. Applications:Applicationareasforelectricalsystems include:

Setting: turbine configuration, renewable energy, network supply line, and capacitor placement.

Performance: Hydrothermal plant integration, maintenance planning, loss reduction, load management, FACT control.

Analysis: Harmonic distortion reduction, filter design, load frequency control, load flow. Since genetic algorithms support the dynamic survival system, several ways to increase the efficiency of power grid processes and increase energy output are generally proposed. In addition to those methods, genes are used algorithms, the easiest way to withstand all obstacles

areoften chosen because the best method among the proposed methods (durability survival).

Consider a functional cable. In the event of any error within the cable, the error scanner detects the error and feeds it into a vague system. Only three-line currents are sufficient to use this system and therefore the angular difference between the current error and previous phases is used as input to the ambiguous system. A blurred system is used to detect the immediate effect of an error type. Indistinct systems are often used to identify errors.

Artificial neural networks and professional programs are widely used to improve driving performance. Nature sensors record natural and atmospheric conditions and provide them as a contribution to professional programs. A professional system is a computer program created by an information engineer that provides the values of the parameters used for the output. ANN is trained to translate line parameter values in a specific range that supports environmental conditions. When performance does not reach a certain level, a variable number of hidden layers, a variation other than a different number of neurons in each layer is usually created. Professional systems use communication and information systems to solve problems that are not difficult or can be solved by human skills and ingenuity. Because professional programs are computer programs, the coding process for these programs is easier than calculating and measuring the values of the parameters used in production, transmission, and distribution.

Any modifications even after design are usually done easily because they are computer programs. In fact, the measurement of those values is often done and further research to increase the efficiency of the method is often performed.

4. SYMBOLIC LOGIC

Because this ambiguity can clarify available information and reduce the severity of problems, symbolic reasoning is beneficial for many operating systems. In energy systems, the unconscious mind is suitable for use in many environments where available information involves uncertainty. For example, the drawing may involve logical thinking, but it is often used in numbers, with the exception of figurative and outgoing inputs. the symbolic meaning provides a transition from a numerical concept to a figurative one, as well as a return to the output. Since most of the information used to analyze the power grid is of limited value and speculation, figurative thinking is often used to find stable, direct, and indirect outputs. Simplicity explores vague or non-existent ideas and as a result.

5. CONCLUSIONS

An important factor in power grid design and reliability planning.Conventional strategies do not perfect the overall power of energy systems.Tons of research will be done to see the full benefits of the future technology to improve the efficiency of the electricity market, investment and power systems in particular Use renewable energy resources to work.

REFERENCES

1. Stuort Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, edition- Prentice Hall Series in Artificial Intelligence,

publisher-Pearson, 20 December 2019.

2. M.M.Saha, and B.Kasztenny, International Journal of Engineering Intelligent Systems, “The Special issue on AI applications toPower System Protection”, Vol.5, No.4, December 2016, pp.185-93.

3. Pnevmatikakis, Chirstos Boutis, and Zamora, Artificial Intelligence and Innovation 2018, From Theory to Applications, publisherSpringer, 30 August 2008.

4. Anand Hareendran.S, and Vinod Chandra S.S, Artificial Intelligence and Machine Learning.5. Warwick.K, Ekwue.A, and Aggarwal.R, Artificial intelligence in power systems, The Institution of Electrical Engineers, London(2016).

5. Alander J. T., 2010, An indexed bibliography of genetic algorithm in power engineering, Power Report Series 94-1.

6. El-Hawary, Mohamed E., 2013, Electric power applications of fuzzy systems, John Wiley USA.

7. Kirkpatrick S., Gelatt C. D., Vecchi M. P., 2005, "Optimization by simulated annealing". Science. New Series 220, pp.671–680.

8. Lai, Loi Lei, 2005, Intelligent system applications in power engineering: evolutionary programming and neural networks, JohnWilley & Sons, UK.

9. Anis Ibrahim.W.R, Morcos.M.M, Artificial Intelligence and Advanced Mathematical Tools for Power Quality Applications-Asurvey, April 2007.

10 B. Kosko, Neural Networks and Fuzzy Systems, Prentice Hall, Englewood Cliffs, NJ, U.S.A., 2012.

11 Momoh James A., EL-Hawary Mohamed E., 2003, Electric systems, dynamics, and stability with artificial intelligence, MarcelDekker, Inc. USA.

12.Khedher M.Z., Fuzzy Logic in Power Engineering, Regional Conference of CIGRE committees in Arab Countries, May 25-27(1997), Doha, Qatar.

