

Artificial Intelligence and Techniques

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ABSTRACT - In this paper we discuss about what is artificial intelligence? Awareness is only marginally relevant to artificial intelligence (AI), because to most researchers in the field other problem seem more pressing. However, there have been proposals for how awareness would be accounted for in a complete computational theory of mind. Artificial intelligence is also science of automating intelligence behaviors currently achievable by humans. There is a large amount of subjectivity in what exactly constitutes artificial intelligence. And the power system has grown tremendously over a few decades, as the size and complexity of the power system consisting of generations, transmission line, and distribution transformation etc. increase the possibility of inviting faults. In the future, intelligent machines will replace or enhance human capabilities in many areas. Artificial intelligence exhibited by machine or software. It is the subfield of computer science. Application areas of artificial intelligence is having a huge impact on various field of life as expert system is widely used these days to solve the complex problem in various areas as science, engineering, weather forecasting. It will consider the areas employing the technology of artificial intelligence. This paper will briefly discuss some of the technology and the application areas.

Keywords: - Introduction, Neural network (computer), Fuzzy logic, Evaluating process, Conclusion.

I INTRODUCTION

Artificial intelligence (AI) is the ability of a computer program or a machine to think and learn. It is also a field of study which tries to make computers smart. John McCarthy came up with the name artificial intelligence in 1955. In general use, the term artificial intelligence means a machine which mimics human cognition. At least some of the things we associate with other minds, such as learning and problem solving can be done by

computers, though not in the same way as we do. An ideal (perfect) intelligent machine is a flexible agent which perceives its environment and takes actions to maximize its chance of success at some goal. As machines become increasingly capable, mental facilities once thought to require intelligence are removed from the definition. For example, optical character recognition is no longer perceived as an exemplar of artificial intelligence. It is just a routine technology. At present we use the term AI for successfully understanding human speech, competing at a high level in strategic game systems (such as Chess and Go), self-driving cars, and interpreting complex data. Some people also consider AI a danger to humanity if it progresses unabatedly. An extreme goal of AI research is to create computer programs that can learn, solve problems, and think logically. In practice, however, most applications have picked on problems which computers can do well. Searching data bases and doing calculations are things computers do better than people. On the other hand, perceiving its environment in any real sense is way beyond present-day computing. AI involves many different fields like computer science, mathematics, linguistics, psychology, neuroscience, and philosophy. Eventually researchers hope to create a general artificial intelligence which can solve many problems instead of focusing on just one. Researchers are also trying to create creative and

emotional AI which can possibly empathize or create art. Many approaches and tools have been tried.[1]

II ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is that computers simply mimic behaviors of humans that would be regarded as intelligent if a human being did them. However, within this definition, several issues and views still conflict because of ways of interpreting the results of AI programs by scientists and critics. The most common and natural approach to AI research is to ask of any program, what can it do? What are the actual results in comparison to human intelligence? For example, what matters about a chess-playing program is how good it is. Can it possibly beat chess grand masters? There is also a more structured approach in assessing artificial intelligence, which began opening the door of the artificial intelligence contribution into the science world. According to this theoretical approach, what matters is not the input-output relations of the computer, but also what the program can tell us about actual human cognition. [2] Artificial intelligence is the study and developments of intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate and perceive the objects. John McCarthy coined the term in 1956 as branch of computer science concerned with making computers behave like humans. It is the study of the computation that makes it possible to perceive reason and act. Artificial intelligence is different from psychology because it emphasis on computation and is different from computer science because of its emphasis on perception, reasoning and action. It makes machines smarter and more useful. [3]

III NEURAL NETWORK

Artificial Neural Networks are relatively crude electronic models based on the neural structure of the brain. The brain basically learns from experience. It is natural proof that some problems that are beyond the scope of current computers are indeed solvable by small energy efficient packages. This brain modeling also promises a less technical way to develop machine solutions. This new approach to computing also provides a more graceful degradation during system overload than its more traditional counterparts. These biologically inspired methods of computing are thought to be the next major advancement in the computing industry. Even simple animal brains are capable of functions that are currently impossible for computers. Computers do rote things well, like keeping ledgers or performing complex math. But computers have trouble recognizing even simple patterns much less generalizing those patterns of the past into actions of the future. Now, advances in biological research promise an initial understanding of the natural thinking mechanism. This research shows that brains store information as patterns. Some of these patterns are very complicated and allow us the ability to recognize individual faces from many different angles. This process of storing information as patterns, utilizing those patterns, and then solving problems encompasses a new field in computing. This field, as mentioned before, does not utilize traditional programming but involves the creation of massively parallel networks and the training of those networks to solve specific problems. This field also utilizes words very different from traditional computing, words like behave, react, self organize, learn, generalize, and forget. Whenever we talk about a neural network, we should more popularly say Artificial Neural Network (ANN). ANN are computers whose architecture is modeled after the brain. They typically consist of hundreds of simple processing units which are wired together in a complex communication network. Each unit or node is a simplified model of real neuron which sends off a new signal or fires if it receives a sufficiently strong Input signal from the other nodes to which it is connected. Traditionally neural network was used to refer as network or circuit of biological neurons, but modern usage of the term often refers to ANN. ANN is mathematical model or computational model, an information processing paradigm i.e. inspired by the

way biological nervous system, such as brain information system. ANN is made up of interconnecting artificial neurons which are programmed like to mimic the properties of biological neurons. These neurons working in unison to solve specific problems. ANN is configured for solving artificial intelligence problems without creating a model of real biological system. ANN is used for speech recognition, image analysis, adaptive control etc. [4]

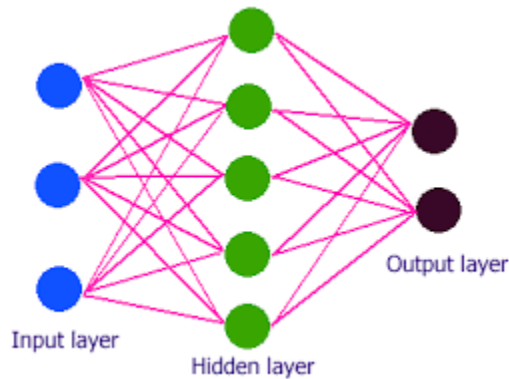


Figure 1: A simple neural network diagram.

IV FUZZY LOGIC

Fuzzy Logic (FL) in PSS (Power system stabilizer): In 1964, Lotfi Zadeh developed FL to address inaccuracy and uncertainty which usually exist in engineering problems [10]. A design process for a fuzzy logic based PSS (FLPSS) was proposed for a multi-machine power system. The input signal to FLPSS is the speed deviation of the synchronous generator and its derivative. For the robustness of the FLPSS, five generator power systems were used and for designing a normalized sum-squared deviation index were used. This novel input signal based FLPSS was applied in the multi-machine environment. [5] In mathematics, fuzzy sets are sets whose elements have degrees of membership. Fuzzy sets were introduced by Lotfi A. Zadeh and Dieter Klaua in 1965 as an extension of the classical notion of set. ... In fuzzy set theory, classical bivalent sets are usually called crisp sets.[6]

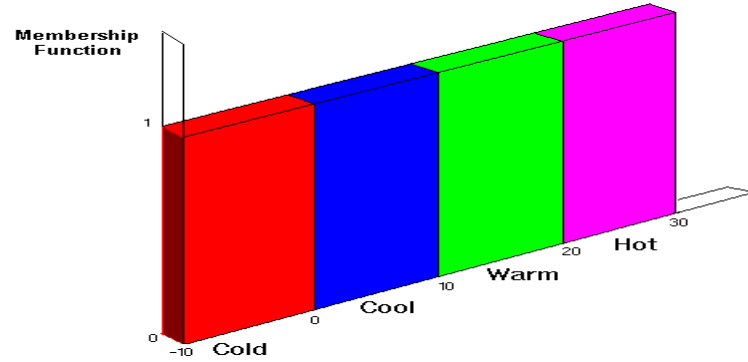


Figure 2: Bivalent sets of to characterize the temp. of a room

A fuzzy set operation is an operation on fuzzy sets. These operations are generalization of crisp set operations. ... The most widely used operations are called standard fuzzy set operations. There are three operations: fuzzy complements, fuzzy intersections, and fuzzy unions.

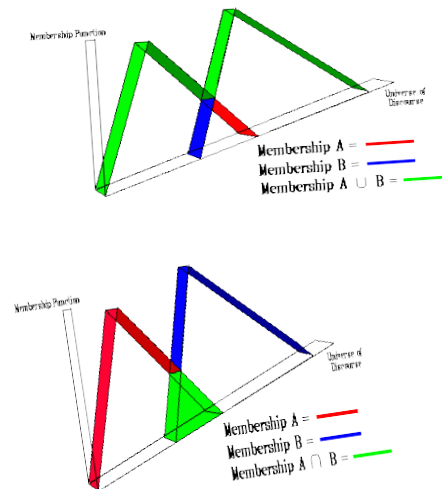


Figure 3: Union set and Intersection set

V ADVANTAGE OF AI

- It can help improve our way of life.
- Machines will be able to do jobs that require detailed instructions.
- There will be less injuries and stress to human beings.

- Many of our health problems now have possible solutions with the use of Artificial Intelligence in studies at universities.

VI DISADVANTAGE OF AI

- Limited Ability.
- Slow Real Time Response.
- Can't Handle Emergency Situation.

VII REFERENCES

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