

Virtual Mind: The Blue Brain

Latika Kharb¹, Deepak Chahal², Khim Singh Rawat³

Professor ^{1,2}, MCA Student³, Jagan Institute of Management Studies, Rohini, Delhi-110085

Abstract

Human brain is considered to be the most important formation of God. The man becomes wise in light of the brain. "Blue Brain" is the world's first virtual brain. Today researchers are in research to make a counterfeit brain that can do anything like making choices, reacting, thinking and store anything in memory. The major concern behind this technology is to transfer human brain completely into a machine in such a way that even after the death of a person, the virtual brain can be used and it can act as a the normal human brain of the person. Even after the passing of a person the learning, knowledge, identities, emotions and memories won't be lost which can be utilized further for the improvement of the human culture which implies that a machine can work as a human brain.

Keywords: Human Brain, memory, machine, blue brain, virtual brain.

Introduction

From the above we can say that 'Blue Brain' signifies virtual mind which is equally intelligent like a human. Blue Brain is the concept of figuring out of human brain and recreate its brain inside a computer. The undertaking was firstly established in the year of 2005 in May by Henry Markram at the EPFL that is École polytechnique fédérale de Lausanne in Lausanne, Switzerland. The objectives behind this are to pick up an entire comprehension of the mind and to make it stronger, better and quicker than before. The simulations are completed on a blue gene which is a supercomputer developed by IBM for high performance with minimum power requirement that is it require minimum electric current. This technology requires software depends on Michael Hines NEURON together with some custom-constructed builds.

What is Blue Brain?

IBM is developing a virtual brain which is said to be the Blue Brain. It is the world's first virtual brain. Blue Brain is an Artificial Brain which is not similar to a natural Brain, but is capable to act as a normal Brain. This virtual Brain is capable to take decisions which are based on one or the other situation like a Normal Brain used to make decision and it can also response immediately towards various situations as like human Brain do. So we can say from the above that Blue Brain is fast and responsive as compare to the human brain. This virtual Brain is consist of huge storage area which is capable of storing the large amount of data into it and is also able to work as a super computer. It creates an interface between the natural brain and the virtual brain. This interface helps to stacked up the information from human Mind into the computer. So that the knowledge, intelligence of any person can be kept and utilized further whenever it is required, even after the death of the human body.

NATURAL BRAIN	SIMULATED BRAIN
INPUT In the nervous system in our body the neurons are responsible for the message passing. The body receives the input by sensory cells. This sensory cell produces electric impulses which are received by neurons. The neurons transfer these electric impulses to the brain.	INPUT In a similar way the artificial nervous system can be created. The scientist has created artificial neurons by replacing them with the silicon chip. It has also been tested that these neurons can receive the input from the sensory cells. So, the electric impulses from the sensory cells can be received through these artificial neurons.
INTERPRETATION The electric impulses received by the brain from neurons are interpreted in the brain. The interpretation in the brain is accomplished by means of certain states of many neurons.	INTERPRETATION The interpretation of the electric impulses received by the artificial neuron can be done by means of registers. The different values in these register will represent different states of brain.
OUTPUT Based on the states of the neurons the brain sends the electric impulses representing the responses which are further received by sensory cell of our body to respond neurons in the brain at that time.	OUTPUT Similarly based on the states of the register the output signal can be given to the artificial neurons in the body which will be received by the sensory cell.
MEMORY There are certain neurons in our brain which represent certain states permanently. When required, this state is represented by our brain and we can remember the past things. To remember things we force the neurons to represent certain states of the brain permanently or for any interesting or serious matter this is happened implicitly.	MEMORY It is not impossible to store the data permanently by using the secondary memory. In the similar way the required states of the registers can be stored permanently and when required these information can be received and used.
PROCESSING When we take decision, think about something, or make any computation, logical and arithmetic computations are done in our neural circuitry. The past experience stored and the current inputs received are used and the states of certain neurons are changed to give the output.	PROCESSING In the similar way the decision making can be done by the computer by using some stored states and the received input and the performing some arithmetic and logical calculations.

Figure 1: Comparison of Human Brain & Simulated Brain /Blue Brain

Need of Blue Brain

Pharmaceutical companies are using this technology in molecular modelling so that they can understand the behavior of medicines and can even create the design of new drugs.

- This Blue Brain is faster in comparison to Natural Brain.
- Blue Brain is capable of keeping intelligence as well as knowledge of a person even after the death of the person,
- It is capable of making quick decision and can even response faster as compared to Natural Human Brain.
- This technology can even supervise us in making right decision in case of conflicts.

Difference with Natural Human Brain

- The neurons in the nervous system are in charge of passing the message in the Human Body. The sensory cells in the Human Body produces electric driving forces which are taken by Neurons. These Neurons exchange electric driving forces.
Whereas in Blue Brain, artificial nervous system can be created and so artificial neurons. These artificial neurons are replaced by silicon chip. Thus, this artificial neurons are responsible from passing the electric driving forces to the sensory cells.
- The electric impulses get by the brain from neurons are interpreted in the Brain. And these can be understood in the Brain by numerous neurons by methods for specific conditions.
Whereas in Blue Brain, the artificial electric impulses get by the brain from neurons are interpreted in the Brain. And these can be understood in the Brain by numerous neurons by methods for specific conditions.
- Depending upon the condition of the neurons the Brain sends the electric impulses as the reaction which are additionally gotten with the help of sensory cells which reacts towards the neurons in the brain.

Whereas in Blue Brain, depending upon the condition of the artificial neurons the Brain sends the electric impulses as the reaction which are additionally gotten with the help of artificial sensory cells which reacts towards the artificial neurons in the brain.

- There are some specific neurons in the Human Brain which are responsible for some specific states or functions. These works only when they are required and are capable of recalling the things or event happened in the past. It happens certainly.

Whereas in Blue Brain, there is an auxiliary memory that is capable of storing information or events that happened in the past. The required conditions are used by the registers that help to get these past information which can be further utilized.

- The sources from the past experiences are used by Human Being for making choices, calculations, arithmetic as well as logical calculations.

Whereas in Blue Brain, computer is responsible for performing arithmetic, logical calculations as well as in making choices.

Functioning of Human Brain

Emotions in Human Being are generated from Nervous System. Nervous System is one of the most complex system in Human Being. Nervous system works like an electric driving forces through Human Body.

To understand the concept of this System, three functions are required to be understood first:-

- Sensory Input:** Whenever Human eyes see something or our hands feels something like cold or hot surface, it is due to the sensory cells in Human Body which are also called as Neurons. These Neurons are responsible to communicate something specific straight and directly to the HumanBrain. The process of getting data from the surrounding condition is called as sensory info because things are placed in the brain by method of these senses.
- Integration:** Integration is known to be the translation of things that have felt, tasted as well as contacted with these sensory cells also known as neurons, into reactions that the Body feel. This procedure takes place in the brain where many neurons cooperate together to understand the environment.
- Motor Output:** When the brain has translated all that whatever have been adapted from the surrounding, either via contacting, tasting, or doing something else, the Human Brain communicates something that is specific with the help of neurons to the effecting cells, muscle or organ cells, which work whenever requested and follow up on the environment.

How a Human or a person see, hear, feel, smell, and take decision?

It is possible to transfer the Human Brain with the help of little robots known as the Nanobots. These robots are little enough and are capable to go through all the circulatory system. They have the capacity to screen the action and structure of Human central nervous system by moving through spine and brain. They have the capacity to develop an interface with computers. Nanobots are capable of precisely filtering the structure of Human Brain. It give a total readout of the associations. This data, when move into a computer could then keep on working as us that is like a Human Being. In this manner the information is inserted in the whole brain that will be transferred into the computer.

Conclusion

As we know that the Blue Brain which is the virtual brain can perform much faster than the Natural Brain but the result come out from the Natural Brain is Natural. Sometime the situation arises that the machine cannot feel as like the same as Human Brain. But Virtual Brain performs faster and can contain all the information of Natural brain in its auxiliary memory even if the person is died which is the great achievement in today's world. But a day may come when the virtual brain becomes capable of thinking exactly like a Natural Brain because technology increases day by day.

References

- [1] Brain-Computer Interfaces: An international assessment of research and Theodore W. Berger, John K. Chapin, Greg A. Gerhardt, Dennis J. McFarland, Jose C. Principe, Walid V. Soussou, Dawn M. Taylor, Patrick A. Tresco - Google Books.
- [2] J. Baker, L. Deng, J. Glass, S. Khudanpur, Chin hui Lee, N. Morgan, and D. O Shaughnessy, Developments and directions in speech recognition and understanding, part 1, Signal Processing Magazine, IEEE, vol. 26, no. 3, pp. 7580, 2009.
- [3] Kharb L. Balancing SNS through Visualization, Elixir Journal, Pg 46859-46862, 2017.
- [4] <http://bluebrainproject.epfl.ch>. (2015)
- [5] Lim Hong Swee, Texas Instruments Singapore (P E) Ltd Implementing Speech-Recognition Algorithms.
- [6] <http://research.ibm.com/bluebrain>. (2015)
- [7] Kharb L. Embedding Intelligence through Cognitive Services, International Journal for Research in Applied Science & Engineering Technology, Volume 5 Issue XI November 2017.
- [8] S. Young, Large Vocabulary Continuous Speech Recognition: A Review, IEEE Signal Processing Magazine, vol. 13, no. 5, pp. 4557, 199.
- [9] J. Tebelskis, Speech Recognition using Neural Networks, Pittsburgh: School of Computer Science, Carnegie Mellon University, 1995.