Blue Brain

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***Abstract*—Human brain is the most valuable creation of God. The man is intelligent because of the brain. "Blue brain" is the name of the world's first virtual brain. That means a machine can function as human brain. Today scientists are in research to create an artificial brain that can think, response, take decision, and keep anything in memory. The main aim is to upload human brain into machine. So that man can think, take decision without any effort. After the death of the body, the virtual brain will act as the man .So, even after the death of a person we will not lose the knowledge, intelligence, personalities, feelings and memories of that man that can be used for the development of the human Society.**

***Keywords*— Blue-Brain, Virtual-Mind, Brain Simulation**

I. INTRODUCTION-

We all wonder about the complexities of a human brain. The human brain is considered to be full of complexities. The aim of blue brain technology is to upload the complete information existing in the brain into a computer. If we finally achieve this the even after the death of a human body we can preserve his knowledge and intelligence. The Blue Brain technology is the latest invention in the field of neural networks. This technology will open new doors in the field of artificial intelligence. The blue brain technology provides a comprehensive simulation of the essential internal connectivity of the cerebral parts with the external artificial intelligent network. This study of human brain will lead to a complete sketch of the flow of the electrical signals through thebrain.

The intelligent neurons are a part of cortex existing in the human brain. The international computer giant, IBM has done a considerable research in this domain and has developed a virtual brain. This brain is also known as the human brain. This new technology has made way for considerable improvement in supercomputing, also known as high performance computing. The High performance computing support with blue brain technology is based on the current close connections between IBM and the Blue Brain technology.

Blue brain technology is a new and creative project in the field of science and technology. Blue brain is the name of the world's first ever virtual brain. It is an artificial brain which comes close to undertaking all the tasks that a normal human brain can perform. The project has biological importance and application as well. It is said that the brain is being made fully capable of replacing the human brain after the death of an individual. The human brain is a very complex organ and is very difficult to understand. Through the blue brain, it may be possible to understand the human brain in more depth. The project is taking place in Switzerland.

In 2007, it was reported that this project has ended its first phase successfully and is ready for its further development. Due to the uniqueness and interest in this project, it is getting international fame and recognition. The project has some new and amazing technology, which we used for the purpose of making the artificial brain. For this purpose, scientists which are experts in the field of physics, software, biology and neurology and applying their knowledge to develop a brain which can work just like a human brain.

Fig.1 Blue Brain

II. WHAT IS VIRTUAL [illegible]N?

Virtual brain is an artificial [illegible]n, which does actually the natural b[illegible] as the brain. [illegible] think like b[illegible]sed on the [illegible]ence. [illegible]ural brain can. It is possible by using a super computer, with a huge amount of storage capacity, processing power and an interface between the human brain and this

artificial one. Through this interface the data stored in the natural brain can be up loaded into the computer. So the brain and the knowledge, intelligence of anyone can be kept and used for ever, even after the death of the person.

III. WHY WE NEED VIRTUAL BRAIN?

Today we are developed because of our intelligence. Intelligence is the inborn quality that cannot be created. Some people have this quality, so that they can think up to such an extent where other cannot reach. Human society is always need of such intelligence and such an intelligent brain to have with. But the intelligence is lost along with the body after the death. The virtual brain is a solution to it. The brain and intelligence will alive even after the death. We often face difficulties in remembering things such as people's names, their birthdays, and the spellings of words, proper grammar, important dates, history, facts etc... In the busy life every one want to be relaxed. Can't we use any machine to assist for all these? Virtual brain may be the solution to it. What if we upload ourselves into computer, we were simply aware of a computer, or maybe, What if we lived in a computer as a program?

IV. HOW IT IS POSSIBLE?

First, it is helpful to describe the basic manners in which a person may be uploaded into a computer. Raymond Kurzweil recently provided an interesting paper on this topic. In it, he describes both invasive and noninvasive techniques. The most promising is the use of very small robots, or nanobots. These robots will be small enough to travel throughout our circulatory systems. Traveling into the spine and brain, they will be able to monitor the activity and structure of our central nervous system. They will be able to provide an interface with computers that is as close as our mind can be while we still reside in our biological form. Nanobots could also carefully scan the structure of our brain, providing a complete readout of the connections between each neuron. They would also record the current state of the brain. This information, when entered into a computer, could then continue to function like us. All that is required is a computer with large enough storage space and processing power.

V. WORKING OF BRAIN

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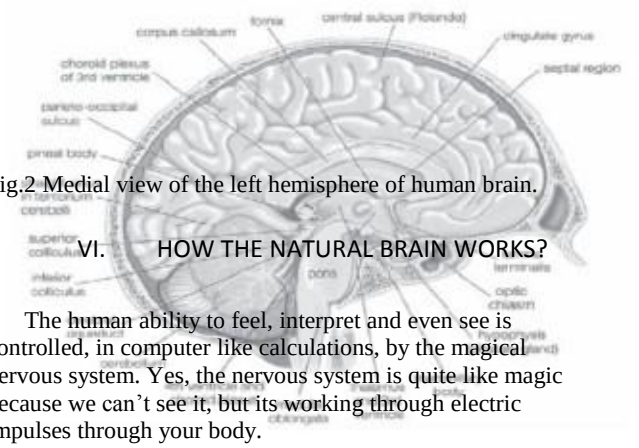

Fig.2 Medial view of the left hemisphere of human brain.

VI. HOW THE NATURAL BRAIN WORKS?

The human ability to feel, interpret and even see is controlled, in computer like calculations, by the magical nervous system. Yes, the nervous system is quite like magic because we can't see it, but its working through electric impulses through your body.

One of the worlds most "intricately organized" electron mechanisms is the nervous system. Not even engineers have come close to making circuit boards and computers as delicate and precise as the nervous system. To understand this system, one has to know the three simple functions that it puts into action: sensory input, integration, motor output.

1) Sensory input: When our eyes see something or our hands touch a warm surface, the sensory cells, also known as Neurons, send a message straight to your brain. This action of getting information from your surrounding environment is called sensory input because we are putting things in your brain by way of your senses.

2) Integration: Integration is best known as the interpretation of things we have felt, tasted, and touched with our sensory cells, also known as neurons, into responses that the body recognizes. This process is all accomplished in the brain where many, many neurons work together to understand the environment.

3) Motor Output: Once our brain has interpreted all that we have learned, either by touching, tasting, or using any other sense, then our brain sends a message through neurons to effecter cells, muscle or gland cells, which actually work to perform our requests and act upon our environment. The word motor output is easily remembered if one should think that our putting something out into the environment through the use of a motor, like a muscle which does the work for our body.

VII. BRAIN SIMULATION-

A comparative discussion of Natural Brain and Simulated Brain is given below.

NATURAL BRAIN	SIMULATED BRAIN
1. INPUT In the nervous system in our body the neurons are responsible for the message passing. The body receives the input by the sensory cells. These sensory cellsproduceselectric impulses which are received by the neurons. The neurons transfertheseelectric impulses to the brain.	1. INPUT In a similar way the artificial nervous system can be created. The scientist has already 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 throughtheseartificial neurons and send to a super computerforthe interpretation.
2. INTERPRETATION Theelectricimpulses received by the brain from the neurons are interpreted in the brain. The interpretation in the brain is accomplished by the means of certain states of many neurons.	2. INTERPRETATION The interpretation of the electric impulses received by the artificial neuron can be done by means of a set of register. The different values in these register will represent different states of the brain.
3. OUTPUT Based on the states of the neurons the brain sends the electric impulses representing the responses which are further received by the sensory cell of our body to respond. The sensory cells of which part of our body is going to receive that, it depends upon the state of the neurons in the brain at that time.	3. 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.
4. MEMORY. There are certain neurons in our brain which represent certain states permanently. When required these state is interpreted by our brain and we can remember the past things. To remember thing we force the neurons to represent certain states of the brain permanently or for any interesting or serious matter this is happened implicitly.	4. 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 retrieved and used.
5. PROCESSING When we take decision, think about something, or make any computation, Logical and arithmetic calculations are done in our neural circuitry. The past experience stored and the current input received are used and the states of certain neurons are changed to give the output.	5. PROCESSING In a similar way the decision making can be done by the computer by using some stored states and the received input & by performing some arithmeticandlogical calculations.

VIII. ADVANTAGES AND LIMITATIONS-

Advantages-

- We can remember things without any effort.
- Decision can be made without the presence of a person.
- Even after the death of a man his intelligence can be used.
- The activity of different animals can be understood. That means by interpretation of the electric impulses from the brain of the animals, their thinking can be understood easily.
- It would allow the deaf to hear via direct nerve stimulation, and also be helpful for many psychological diseases. By down loading the contents of the brain that was uploaded into the computer, the man can get rid from the madness.

Limitations-

Further, there are many new dangers these technologies will open. We will be susceptible to new forms of harm.

- We become dependent upon the computer systems.
- Others may use technical knowledge against us.
- Computer viruses will pose an increasingly critical threat.
- The real threat, however, is the fear that people will have of new technologies.
- That fear may culminate in a large resistance. Clear evidence of this type of fear is found today with respect to human cloning.

IX. APPLICATIONS OF BLUE BRAIN-

- Gathering and Testing 100 Years of Data.
- Cracking the Neural Code.
- UnderstandingNeocorticalInformation Processing.
- A Novel Tool for Drug Discovery for Brain Disorders.
  A Global Facility.
- A Foundtions for Whole Brain Simulations.
- A Foundation for Molecular Modelling of Brain
- Function.

X. CONCLUSION

In conclusion, we will be able to transfer ourselves into computers at some point. Will consciousness emerge? We really do not know. If consciousness arises because of some critical mass of interactions, then it may be possible. But we really do not understand what consciousness actually is, so it is difficult to say. Most arguments against this outcome are seemingly easy to circumvent. They are either simple minded, or simply require further time for technology to increase. The only serious threats raised are also overcome as we note the combination of biological and digital technologies.

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