BLUE BRAIN (WORLD’S FIRST VIRTUAL BRAIN): A CRITICAL REVIEW

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Abstract: Blue brain, world’s first virtual brain. It is coined as a machine that function as a human brain. In the present scenario scientists and researchers are in research to create an artificial brain that can think, response, take decision and keep anything in memory. The main concept of blue brain is to upload human brain into machine, So that man can think, take decision without any effort. The fact is that after the death of the body, the virtual brain will be acted as man. So after the death of a person, world will not lose the knowledge, intelligence, personalities, feelings and memories of that man that can be used for the development of the human society. This study has made an attempt to review critically review the concept of Blue Brain.

Index Terms - Blue Brain, artificial brain, Nanobots

I. INTRODUCTION

Human Brain can be defined as a valuable creation of God. The man is called intelligent, because of his ability to think, that other living things cannot do. It is not possible to ever understand the convolution of human brain. It is complex than any periphery in the world. So there is a possibility to arise a question “is there any possibility to have an alternative or to recreate human brain? “The modern science and technology answer “yes”. Because with the advancement of technology human brains are going to attack by the virtual brain. IBM is now in a research to create a virtual brain of the world. IBM, in partnership with scientists at Switzerland Ecole politechnique Federale de Lausanne’s (EPFL), Brain and Mind institute will begin simulating the brain’s biological systems and output the data as a working 3-dimensional model that will recreate the high speed electrochemical interactions that take place with the brain’s interior (Gunji & Nayana, 2015).

II. NEED AND IMPORTANCE OF THE STUDY

Humans are developed because of their ability to acquire and apply knowledge and skills. Intelligence can be defined as the inborn quality which cannot be created and can be described as the ability to perceive and to retain it as knowledge to be applied towards adaptive behaviour with in an environment or context. Some of them have this quality, so that they can think beyond such an extent where others cannot reach. Human is always needed of such intelligence and to have such intelligent brain with them. But it is fact that this brain power lost along with the body after the expiry. We often face difficulties in remembering things such as people’s names, their birthdays, proper grammars, history facts etc. In the busy schedules of life everyone wants to be less tensed. Virtual brain may be a solution to it.

III. DISCUSSION

3.1 What is Blue Brain?

IBM has been developing virtual brain called ‘Blue brain’. The fundamental aim of this research is to upload human brain in machine which may be a beginning of external life.

3.1 Root map of Blue brain

The Blue brain concept was founded in May 2005 by Henry Markram at the EPEL, in Lausanne, Switzerland. The aim of the research is to gain a complete understanding of the brain and to enhance better and faster development of brain disease treatment. The research involves in depth study of brain using microscope and patch clamp electrodes. Data about all the neuron types are collected and used to build biologically realistic models of neurons and networks of neurons in the cerebral cortex. The simulations are carried out on Blue Gen super computer built by IBM, hence the name Blue brain.

3.2 Virtual brain

Virtual brain is an artificial brain. The virtual brain initiative is considered as a mile stone in the technology scenario. It is one of the best known trails to understand and organize brain data in a useful way. It is a neuro informatics platform that tries to simulate the brain organization on the macroscopic level of detail. Virtual brain is not actually the natural brain, but can act as human brain, capable of thinking, take decisions based on the past experience, and response as natural brain can.
3.3 Possibility of Virtual Brain

Raymond Kurzweil describes two innovative techniques to upload human brain into a computer called which is invasive and non invasive. The most optimistic use of nanobots is that these small robots can travel throughout our circulatory systems. Travelling into the spine and brain, they will be able to monitor the activity and structure of 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 brains providing a complete readout of the connections between each neuron. They have the ability to record the current condition of brain. The information when entered into computers could then continue to function as a human. All what is required is a computer with large enough storage space and processing power.

3.4 How the natural brain works?

The human ability to think, interpret and even see is controlled, in computers like calculations, by the magical nervous system. The nervous system is quite like magic because even though one can’t see it, but it working through electric impulses through the body. One of the world’s most “intricately organized” electron mechanisms is 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.

3.4.1 Sensory input

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

3.4.2 Integration

It is best known as the integration of things we have felt, tasted and touched with our sensory cells, also known as neurons into response that the body recognizes.

3.4.3 Motor output

Once the brain has interpreted all what we have learned, and then it sends a message through neurons to effect cells or muscles which actually works to perform the requests and act upon the environment.

3.5 Comparative Discussion of Brain Simulation

Now the question is how to implement entire natural things by using artificial things

3.5.1 Input

The nervous system in our body, the neurons are responsible for the message passing. The body receives the input by the sensory cells. The sensory cells produce the electronics impulses which are received by neurons. The neurons transfer these electric impulses to the brain.

3.5.2 Interpretation

The electric impulses received impulses received by the brain from neurons are integrated in brain is accomplished by the means of certain states of many neurons.

3.5.3 Output

Based on the states of the neurons the brain sends the electric impulses representing the responses which are further received by the sensory cells our body to respond. The sensory cells of our of which part of our body is going to receive that, it depends upon the states of neuron in the brain at that time.

3.5.4 Memory

There are certain neurons in the body which represents certain states of permanently. When required these state is interpreted by the brain and it can remember the past things. To remember things brain force the neurons to represents certain states of the brain permanently or for any interesting or serious matter this is happened implicitly.

3.5.5 Processing

When one take decision, think about something or make any computation, logical or arithmetic calculations are done in neutral circuitry. The past experience stored and the current input received is used and the states of certain neurons are changes to give output. Now there is no question about how the virtual brain will work. But the question is how the human brain will be loaded into it. This is also possible due to the fast growing advance technology.

3.6 Uploading Human Brain

The uploading is possible by the use of small robots known as the nanobots. The robots are small enough to travel throughout the human circulatory system. Travelling into the spine and brain, they will be able to monitor the activity and the structure of the human central nervous system. They will able to provide an interface with computer 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 complete readout of the connections. This information when entered into a computer, could then continue to function as human. Thus the data stored in the entire brain will be uploaded into the computer.

3.7 Merits and Demerits

3.7.1 Merits

With the blue brain technology, the things can be remembered without any effort and decisions can be made without the presence of a person. By downloading the contents of the brain that was uploaded into computers the man can get rid from
madness. Blue brain would allow the deaf to hear via direct nerve simulation, and also be helpful for many psychological diseases. Even after the death of the human intelligence can be used.

### 3.7.2 Demerits

Due to the blue brain man become depended on the computer system. This technology can also be used by terrorist and enemy countries to use against human society. The real threat however is the fear that people will have of two new technologies. That fear may culminate in a large resistance. Clear evidence of this type of fear is found in today world with respect of human cloning.

### 3.8 CURRENT RESEARCH WORKS

1. IBM, in partnership with Scientists at Switzerland’s Ecole Polytechnique Federale de Lausanne’s (EPFL) Brain and Mind Institute will begin simulating the brain’s biological systems and output the data as a working model with three dimensional aspects that will rebuild the high speed electro chemical interactions that take place within the interior of brain. The model consists of cognitive functions such as language, learning, perception and memory in addition to brain malfunction such as psychiatric disorders like depression and autism. From there the modelling will expand to the other of the brain and if successful, shed light on the relationship between genetic, molecular and cognitive function of the brain.

2. Researchers at Microsoft’s media Presence Lab are developing a “virtual brain” a PC based database that holds a record of an individual’s complete life experience, called MY Life Bits, the projects aims to make the data base of human memories searchable in the manner of conventional search engine. By 2047, almost all the information will be in cyberspace including all knowledge and creative works, said one of the projects leaders, Gorden Bell.

Rodrigo Laige Gabriel Mindlin of the University of Buenos Aires in Argentina has devised a computer model of a region of the brain called the RA nucleus which controls muscles in the lungs and vocal folds. The model brain can accurately echo the song of the South American sparrow. The bird sing by forcing air from their lungs past folds of tissue in the voice box. The electric impulses from the brain that force the lungs had been recorded and with the equivalent impulses were passed to the computer model of the lungs of the bird it begins to sing like the bird (New Scientist Magazine).

### IV. CONCLUSION

With the blue brain or the virtual brain technology we will be able to transfer ourselves into machines to some extent. This advanced technology will help to retain the intelligence of most brilliant people in this world so that their intelligence can be utilized to our society even after their posthumous. Simple minded arguments can be neglected and we are in time to make it happen and to implement. Blue Gene super computer can simulate up to 100 cortical columns, 1 million neurons and 1 billion synapses at once. So scientists with the advanced technologies will make it true by the year 2023.

### REFERENCES
