Blue Brain Technology

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Abstract—**Blue brain technology is otherwise known as artificial brain. In today's world, scientists are in research to create an artificial brain that can think, respond, the ability to take decision, and keep everything in memory. To upload the human brain into machine is the main aim of this technology. So that a person can think, respond to something and the ability to take resolution without any endeavour. After the death of the individual, this technology will be act as a man. So, even after the death of a person this virtual brain will not lost the knowledge, personalities, memories and feelings of that man.**

Index Terms—**Virtual brain, Nanobots, NCC, Neurons, Cerebellum, Cerebrum.**
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I. INTRODUCTION

Human brain is one of the valuable creations of god. The human brain that detects and translates the information delivered by the impulses and then it enables the person to react. Intelligence of a person can be determined by the human brain. IBM is now in research to create this virtual brain technology, called "Blue brain". The blue brain technology is the first virtual brain in the world. Blue brain is a machine that can function as a human brain even after the death. IBM is developing a virtual brain technology in partnership with scientists at Switzerland's Ecole Polytechnique Federale de Lausanne's (EPFL). This virtual brain will be implemented within 30 years and will be able to scan ourselves to the computer.

Blue Brain

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1.1 Blue Brain

What is Virtual Brain?

Virtual brain is an artificial brain, but can act as the brain. It can think like human brain, the tendency to take decisions based on the past experience, and response as the human brain can. It is possible by using a super computer, with a large amount of storage capacity, processing power and an interface between the human brain and this artificial brain. Through this interface the information stored in the human brain can be up loaded into the computer. So the knowledge, intelligence and information of anyone can be kept and used for ever, even after the death of the person.

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1.2 Virtual Brain

Why we Need Virtual Brain?

Intelligence has been defined by the capacity for logic, emotional, understanding, self-awareness, learning, creativity and problem solving. Generally it can be described as the ability to perceive information and to retain it as knowledge. Intelligence is one of the inborn qualities of a person that cannot be created. Some people have these skills, so they can able to think up to some extent whether other cannot reach.

Human society is always in need of such intelligence but that intelligence is lost along with the body after death. So that virtual brain is created as the solution to it.

II. WORKING OF NATURAL BRAIN

Getting to Know More About Human Brain
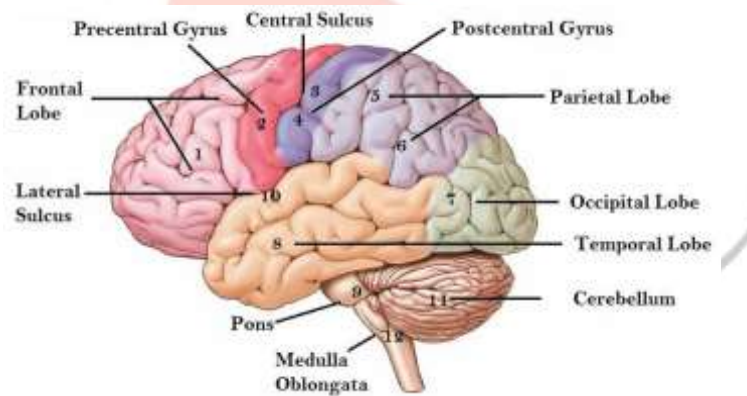
2.1 Human Brain

Human brain is the directive center for the nervous system. It receives input from the sensory organs and generates output to the muscles. The human brain weighs about 3.3 lbs and constitutes 2 percent of the human's total body weight. The human brain consists of three major divisions:

1. Cerebrum
2. Brainstem
3. Cerebellum

Functioning of Brain
Sensory Input

When the eyes see something or hands touch something, the sensory cells also called as neurons, sends a message to the brain. The action of getting information from our environment is called sensory input.

Integration

Integration is the interpretation or the process of combining information from various sources. The nervous system combines the information from the different senses like vision, touch, hearing, etc. It is very important for the ability of brain to extract and organize the information about the surrounding environment.

Motor Output

Motor output that involved in the process of activating muscles. Motor system processing and interpreting the sensory input and deciding what should be done at each and every time.

III. MODELING THE BLUE BRAIN

a) Modelling the neurons
b) Modelling connections
c) Modelling the columns

Modeling the neurons

The shape and structure are used to influences its electrical properties. Electrical behaviour of juvenile rat and neuron morphology is used to develop this model.

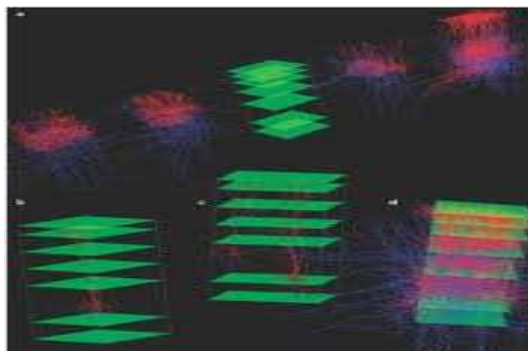*3.1Modeling the Neurons*

Modeling Connections

The essential information's are provided by the precise density and volume of the cell for constructing the cortical circuits. The intensive calculation of blue gene is used to fix the synapse locations.
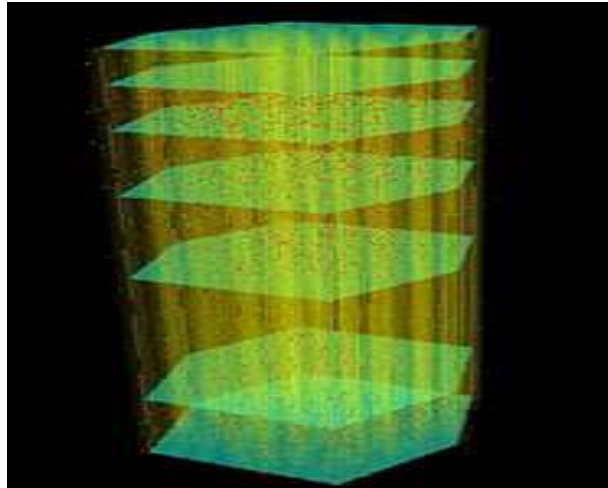

3.2 Modeling connections

Modeling the columns

The intensive calculation results in the recreation at the cellular level of NCC. The model of NCC was completed successfully at the end of 2006.

3.3 Modeling the columns

Model of NCC

3.4 Model of NCC

IV. BRAIN SIMULATION

NATURAL BRAIN	SIMULATED BRAIN
The inputs are given through the neurons.	The inputs are given through the silicon chip or artificial neurons.
Interpretation by various states of neurons in the brain.	By a set of bits in the specified set of register.
Output through the natural neuron.	Output through the silicon chip.
Processing through arithmetic and logical calculations.	Processing through arithmetic, logic calculation and artificial intelligence.
State of neuron has permanent memory.	Through secondary memory.

V. UPLOADING HUMAN BRAIN

The uploading is only possible by the use of nanobots otherwise called as small robots. These small robots have the tendency to travel throughout the circulatory system. The nanobots travelling into the spine and brain, they will be able to monitor the structure and activities of central nervous system. Nanobots will be able to provide an interface between computers. The small robots then scan the structure of the brain and provide a complete readout of the connection. The information stored in the brain will be uploaded into the computer through the interface. Once the microcircuit is built, the blue gene is pressed inside to solve the complex mathematical equations that preside over the electrical activity. The electrical impulse then travel from one neuron to other. The Blue Brain team is working for the computation to create one second activity that can be modelled in one second.

VI. ADVANTAGES AND DISADVANTAGES

Advantages
* Remember things without any effort.
* The knowledge, intelligence, personalities, feelings of a person will not be lost even after the death.
* It provides an ability to take decision without the presence of a person.
* Through the electric impulse from the brain of the animal their activities can be easily understood.
* It is very useful for deaf and also allows them to hear via direct nerve stimulation

Disadvantages
* People become dependent upon the computer.
* Others may use technical tricks and intelligence against us.
* Computer virus will result in critical threat.

VII. HARDWARE AND SOFTWARE REQUIREMENTS

* 22.8 TFLOPS peak processing speed.
* 8,096 CPUs at 700 MHz (downgraded to handle massive parallel processing).
* 256MB to 512MB memory per processor.
* Linux and C++ software.

* 100 kilowatts power consumption.
* Very powerful Nanobots to act as the interface between the natural brain and the computer.

VIII. CONCLUSION

Hence I conclude that virtual brain also called as blue brain will help us to transfer ourselves into computer at some points. Through the combination of biological and digital technologies we will be able to overcome the serious threats that are raised

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