THINKING CIRCUIT

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----------**ABSTRACT**----------
The term neural network was traditionally refers to a network or circuit of biological neurons. Biological neural networks are made up of real biological neurons that are connected or functionally related in a nervous system. In the field of neuroscience, they are often identified as groups of neurons that perform a specific physiological function. Thinking circuit is a biological neural network but primarily we can simulate it in artificial neural network which can be use in artificial intelligence. The mechanism of thinking circuit is based on comparison of one type of data with other type of data by means of third type of data. Thinking circuit comprises with many screens i.e. visual, audio, olfactory, gustatory, somatic, motor, total understanding screen, thinking screen, output screen, bridge &initiator. There is one rigid screen which is important part of thinking circuit. These screens are connected to each other in a specific pattern or algorithm such that they can perform thinking process. These algorithms can be embedded in computer or Robotic system.

Keywords – neural network, biological neural network, artificial intelligence, working of brain, thinking circuit

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1. INTRODUCTION

Thinking circuit is biological neural network. By virtue of this circuit thinking process is execute in a brain. A biological neural network (sometimes called a neural pathway) is a series of interconnected neurons whose activation defines a recognizable linear pathway. The interface through which neurons interact with their neighbors usually consists of several axon terminals connected via synapses to dendrites on other neurons. If the sum of the input signals into one neuron surpasses a certain threshold, the neuron sends an action potential (AP) at the axon hillock and transmits this electrical signal along the axon.

Neuron is functional unit of nervous system. A neuron is an electrically excitable cell that processes and transmits information through electrical and chemical signals. A chemical signal occurs via a synapse, a specialized connection with other cells. Neurons connect to each other to form neural networks.

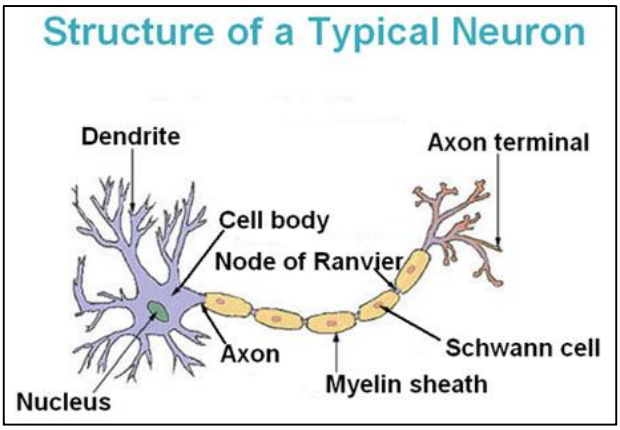

Fig. 1 Anatomical neuron showing cell body ,axon and dendrite

A typical neuron possesses a cell body (often called the soma), dendrites, and an axon. Dendrites are thin structures that arise from the cell body, often extending for hundreds of micrometers and branching multiple times, giving rise to a complex "dendritic tree". An axon is a special cellular extension that arises from the cell body at a site called the axon hillock and travels for a distance, as far as 1 meter in humans or even more in other species. The cell body of a neuron frequently gives rise to multiple dendrites, but never to more than one axon, although the axon may branch hundreds of times before it terminates. At the majority of synapses, signals are sent from the axon of one neuron to a dendrite of another. There are, however, many exceptions to these rules: neurons that lack dendrites, neurons that have no axon, synapses that connect an axon to another axon or a dendrite to another dendrite, etc. All neurons are electrically excitable, maintaining voltage gradients across their membranes by means of metabolically driven ion pumps, which combine with ion channels embedded in the membrane to generate intracellular-versus-extracellular concentration differences of ions such as sodium, potassium, chloride, and calcium. Changes in the cross-membrane voltage can alter the function of voltage-dependent ion channels. If the voltage changes by a large enough amount, an all-or-none electrochemical pulse called an action potential is generated, which travels rapidly along the cell's axon, and activates synaptic connections with other cells when it arrives.[1]

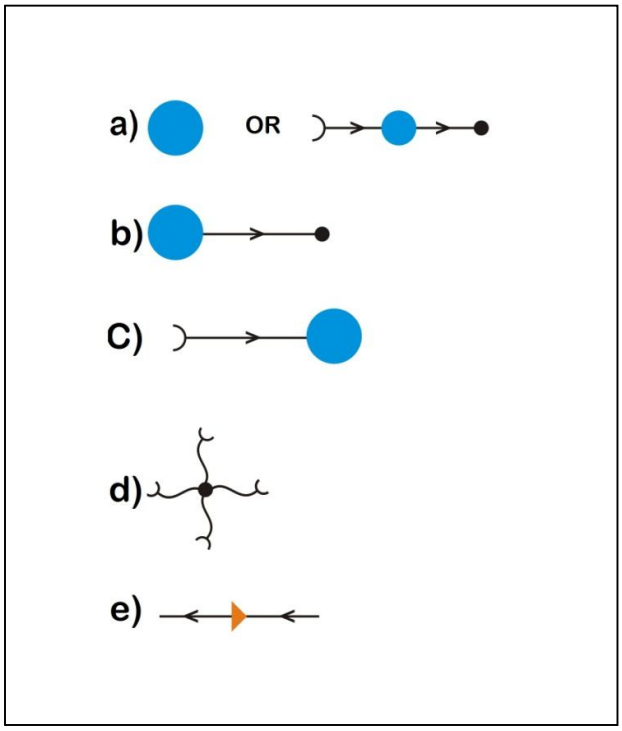

Fig. 2 circuit diagram showing (a) neuron with dendrite and axonal end .(b) neuron with axonal end .(c)neuron with dendrite .(d)Adaptive bridge .(e) Thinking bridge. Arrow shows direction signal.

Thinking circuit comprises with many screens i.e. visual, audio, olfactory, gustatory, somatic, motor, total understanding screen, thinking screen, output screen, bridge &initiator. We will discuss it one by one.

2. SCREEN

Screen is defined as a layer of neural network which performs specific function each screen has unique function. Screen differentiate one type of neural network from another type of neural network .it is like partition between two neural networks. Screens play an important role to organize neural network in specific algorithm. Screens are responsible for changing a shape of stimulus. After leaving a one type of screen stimulus takes the other shape e.g. Formation of word from letters and formation of sentence

from words. Formation of language from words it means that three types of screen are use in language formation. Basically I divide neural network only in major screens.

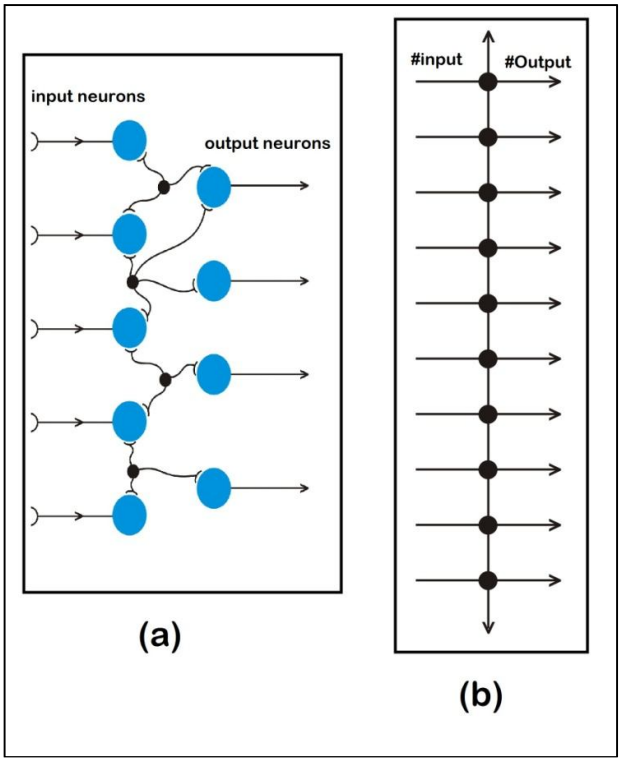

Fig. 3 circuit diagram shows (a) screen with layer of input neurons , adaptive bridge and output neurons. (b) shows an abbreviation of circuit diagram (a) .

2.1 TYPES OF SCREENS

Essentially there are three types of screens

1) Input screen:

It is a layer of neuron which directly coming from receptors without any integration with other screens. Signals from receptors are directly stuck on input screen. It is simple screen and it conducts information from receptors to hidden screen. E.g. Visual screen, auditory screen, Olfactory screen, *gustatory* screen, somatosensory screen.

2) Hidden screen:

Signals from input screens are integrated with other screens by hidden screen. Hidden screens are secondary to input screens. It is more complex than input screens. Stimulus from other screens are integrated with each other's .they perform higher function than input screen. E.g. total understanding screen, thinking screen.

3) Output screen:

They conduct signals from hidden screen to effecter organ for performing specific function e.g. motor screen

3. INPUT SCREENS:

3.1 VISUAL SCREEN:

It is an input screen for visual signals. Signals from eye receptors are stuck on visual screen. Here Primary visual cortex of the brain refers as visual screen in a thinking circuit & visual association area is refer as visual understanding screen of thinking circuit. Visual understanding screen (VUS) is part of the total understanding screen (TUS).signals from the eye receptors are collected on the visual screen of thinking circuit and it integrate with other signals by total understanding screen. Before enter in to TUS it forms rigid synapse on rigid screen. Functions of rigid screen we will discuss later.

3.2 AUDITORY SCREEN:

It is an input screen for audio signals. Signals from ear receptors are collected on auditory screen. Here Primary auditory cortex of the brain refers as auditory screen in a thinking circuit & auditory association area is refers as auditory understanding screen of thinking circuit. Auditory understanding screen (AUS) is part of the total understanding screen (TUS).signals from the ear receptors are collected on the auditory screen of thinking circuit and it integrate with other signals by total understanding screen. Rigid synapses are forms on rigid screen by signals which comes from auditory screen.

3.3 OLFACTORY SCREEN:

It is an input screen for olfactory signals. Signals from nose receptors are collected on olfactory screen. Here Primary olfactory cortex of the brain refers as olfactory screen in a thinking circuit & olfactory association area is refers as olfactory understanding screen of thinking circuit. olfactory understanding screen (OUS) is part of the total understanding screen (TUS).signals from the nose receptors are collected on the olfactory screen of thinking circuit and it integrate with other signals by total understanding screen. Rigid synapses are forms on rigid screen by signals which comes from olfactory screen.

3.4 GUSTATORY SCREEN

It is an input screen for gustatory signals. Signals from tongue are collected on gustatory screen. Here Primary Gustatory cortex of the brain refers as Gustatory screen in a thinking circuit & Gustatory association area is refer as Gustatory understanding screen of thinking circuit. Gustatory understanding screen (GUS) is part of the total understanding screen (TUS).signals from the tong receptors are collected on the Gustatory screen of thinking circuit and it integrate with other signals by total understanding screen. Rigid synapses are forms on rigid screen by signals which comes from gustatory screen.

3.5 SOMATOSENSORY SCREEN:

It is an input screen for somatosensory signals. Signals from skin or mucosa are simulate on somatosensory screen. Here Primary Somatosensory area of the brain refers as Somatosensory screen in a thinking circuit & Somatosensory association area is refer as Somatosensory understanding screen of thinking circuit. Somatosensory understanding screen (SUS) is part of the total understanding screen (TUS).signals from the skin receptors are collected on the Somatosensory screen of thinking

circuit and it integrates with other signals by total understanding screen. Rigid synapses are forms on rigid screen by signals which comes from Somatosensory screen.

4. HIDDEN SCREENS:

4.1 TOTAL UNDERSTANDING SCREEN (TUS):

The all above screens are input screens. But the total understanding screen is hidden screen. It is complex type of neural network. Information from input screens are integrates and understands by TUS. It is difficult to understand how brain can get feeling. Brain connects the things outside i.e. in world not inside brain when it happens only during real time functioning mode not during thinking mode.TUS has three components that is type1 component, type2 component & Ic

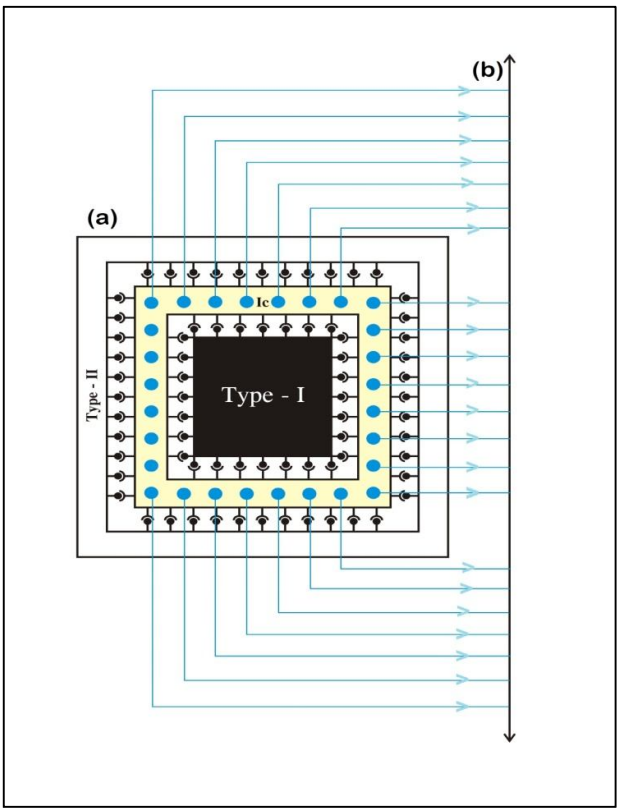

Fig. 4 circuit diagram shows (a) TUS with Type I component, Type II component and Ic. (b) Output screen (motor screen) .

4.1.1 Type 1 component:

When brain experience new stimulus I mean to say basic stimulus like black color for eye receptor which got to brain during eye close , silence during there is no sound , tasteless when there is nothing on tongue , pressure less , cold or hot and many more. These are the primary stimulus for brain. This stimulus is nothing but first experience to brain. Hence they act as a positive potential for other signals. In TUS they act as comparator. (Ic) compare this singles with other signals.

4.1.2 Type 2 component:

It is the area of the brain in which secondary signals are store. Secondary signals are nothing but the related signals to primary signals. All this related synapses are connecting by neuronal bridges. Secondary signals are comparable single with primary signal. Both the singles neutralize in IC and experience by it.

4.1.3 (IC) component:

Basically in Ic related information to the person is store. information related to "I" word it is very difficult to feel and understand to Ic but when this circuit embed in computer it also feel the natural experiences. Ic is connect with motor screen for output function .It is the circuit which present in between type1 and type2 component. type 1 and type 2 data are neutralized in Ic.

4.2 THINKING SCREEN:

Thinking screen is a cyclic circuit of neural network in which signals are rotate according to external stimulus to brain. It forms by the neuronal ends of the pyramidal bridges. Due to thinking screen events are recall in total understanding screen and we experience virtually in TUS. An environmental stimulus initiates or gives emotional flow inside thinking circuit. The neuronal ends of pyramidal bridges are connected to each other by cyclic bridges. There is an initiator which stimulates one of cyclic bridge which starts the thinking process. Initiator is an environmental or outer stimulus to brain.

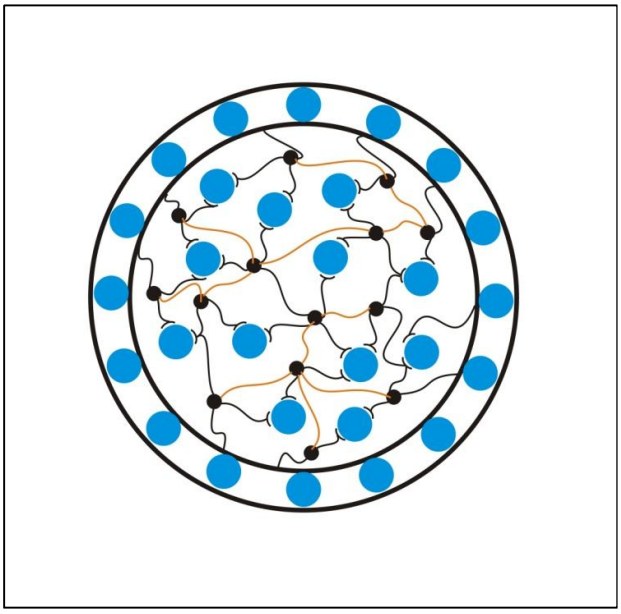

Fig. 5 circuit diagram shows thinking screen with adaptive bridges and linear pathway of travelling signals in adaptive bridges.

Hence the working of our brain is depends on working of others brain or environment not on you.

5. MOTOR SCREEN:

Motor screen is output screen. Motor screen is originated from Ic component of TUS. Motor screen conducts motor signals to effecter organ for performing specific function.

6. NEURONAL BRIDGE:

It is an adapted type of neural networks. It is possible to store information, integrate it and understand due to neuronal bridges they are the key network for thinking circuit .they are plastic component of neural network they can adapt according to condition usually perpendicular primary neural network that carry signals from receptors .signals are travel in the forms of membrane potential it is different for different neurons in brain. As a weight function in artificial neurons .When any stimulus to the brain it is converted in to some potential .it is fixed in the form of rigid synaptic potential. Each stimulus has its own rigid synaptic potential .|At a time, multiple neurons are stimulated by various stimuli and these stimulated neurons are connected to each other by neural network called neuronal bridge. When two or more neuron is stimulate at a same time, then they are connects by neuronal bridge. When one of neuron from group stimulates then it will stimulate other neuron in consequence manner through neuronal bridges.
there are two types of neuronal bridges

6.1. THINKING BRIDGE (TB)

Thinking bridges are those whose axonal ends connect each other and forms thinking screen

6.2. ADAPTED BRIDGE (AB)

Adapted bridges are those present everywhere in circuit rather than thinking bridges. adapted bridges are present from input screen to hidden screen everywhere in circuit. they are responsible for formation of path for traveling signal in other word for organize other neuron in specific algorithm.
Neuronal bridges are responsible for memory, thinking, understanding and integration process in nervous system. In thinking circuit, neuronal bridge plays important role in language formation, picture formation and integration.

7. RIGID SCREEN:

Rigid screen is nothing but the primary door for all signals which entered into total understanding circuit. Let us consider that rigid membrane has a hole with fixed radius of rigid membrane potentional each neuron of rigid screen has their rigid membrane potentional. the synapses of rigid screen fires same potentional at every time according to type of stimulus that means same type of stimuli fires the same type of potential at each time. The neurons which lefts rigid screen which carry stimulus from receptor neurons are connected vertically by neuronal bridges. all sensory screens are connecting by neuronal bridges according to condition. It helps to integrate different stimulus with each other at a same time. These vertical neuronal bridges forms vertical inverted pyramid of neural network. The ends of vertical pyramid of neural network form the thinking screen.

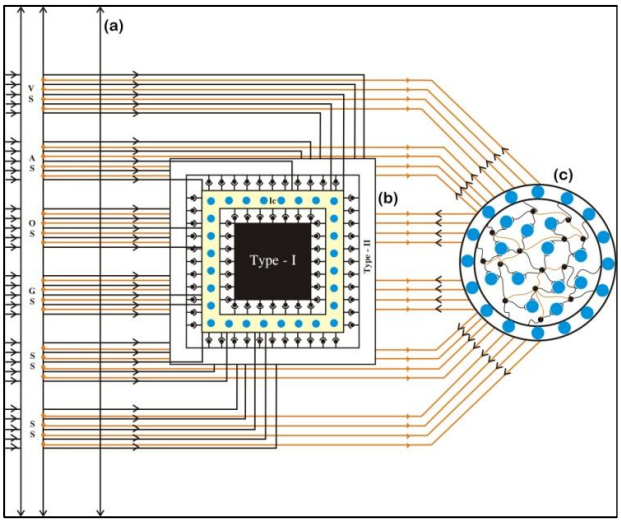

Fig. 6 circuit diagram shows input screens VS, AS, OS, GS, and SS. (a) rigid screen. (b)Total understanding screen (TUS) (c) Thinking screen (TS).

8. CONCLUSION

Thinking circuit is a biological neural network. We can simulate it in to artificial neural network. Which can be use in artificial intelligence, robotics. As we can exactly simulate this algorithm into machines it can perform thinking process in machine. It has billions of application according to level of circuit used. We can easily classify these applications in three generations. fist generation based upon simple screens it include like image processing .second generation includes face identification, object recognition and more), sequence recognition (gesture, speech, handwritten text recognition), medical diagnosis, financial applications (automated trading systems), data mining (or knowledge discovery in databases, "KDD"), visualization and e-mail spam filtering. It is based on TUS level applications. Third generation applications are based on thinking screen include thinking machines which can perform higher complex function which can be use in robotics ,Aeronautics and many more branches.

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BIOGRAPHY OF AUTHOR

Myself Mukesh R. Bangar. I was born and raised in Yavatmal city. I work as intern at Govt. Dental College and Hospital, Nagpur, INDIA. I was stammerer who can talk in close room but not in front of people. This thing helps me in invention of Thinking circuit and struggle more than a normal human. I think that struggle is real training for me. Every time I focused on finding the answers of 'HOW' rather than 'WHAT'. With a great teamwork we can create thinking machines, Robots or devices .It has billions of application. It will be biggest milestone in technology. I have published one research paper in international journal. My interested area in research is neurocomputational science, artificial intelligence and robotics.