Qubit And Binary Bit in Neural Networks

Mr. S.MOHAN[1], Dr.M.VARATHARAJ[2], Mrs V.RADHA[3]
[1]Assistant professor, Department of computer science, [2]Associate professor, Department of EEE,
[3]Head of the department of computer science,
V.S.B. College of Engineering Technical Campus, Coimbatore, Tamil Nadu, India

***Abstract*—In this paper we will discuss about qubit and binary bit in neural network .Bits are fundamental of information represents 0 or 1 in classical computing .But Qubit is quantum mechanical equivalent able to exits super position of both 0 and 1 simultaneously. Offering the potential of increased computational power.in classical computing and quantum computing what is the ΦΦbenefit of the neural networks compare to the classical computing and quantum computing weightage of selection in neurons (input, hidden, output) in probabilistic while bits are discrete state, qubit offer the probabilities represent of range of state simultaneously potentially new avenues for neural network development and performance. Focus on six generation.**

***Key Words*—qubit, binary bit, bra-ket, AI**

I. INTRODUCTION:

This paper qubit (quantum bit) what is advantageous from the binary bit. Binary bit means which is either 0 or1 .that is classical computing. the user can know the input and output of the classical computing .

But qubit represent in probabilities states and also discrete state offer the 0 and 1 simultaneously which occupied by the either 0 and 1 in one elements that is exists 0 and also have the x=0+x it consists of either 0 or 1 with the format of {ϕ/Ψ}.ϕ=0+x, Ψ=0+x the x may be either 0 or 1 which is simultaneously selected with its weightage of the neural networks.
In classical computing which known output of the state by the user which either 0 or 1 but not identify the state of weights .ϕ means it consists two states. Ψ means it consists two states .because it select output in the complex stage.
The problem probabilities {ϕ/Ψ}=>{ϕ}={0,1} and {Ψ}={0,1}.it consist of two states simultaneously occur in one element because it is complex problem solve easily .so this state are called bra-ket which is |0>,|1> will discuss later about the qubit and binary bit because it is sixth generation of the computer.
Qubit (quantum bit) state:

Qubit means quantum bit it is not classical bit which is only be 0 or 1 this is exists in a super position of both 0 and1 allowing the more complex computation.

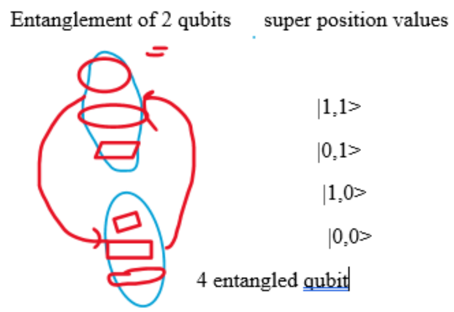
Super position:
Qubit can be multiple state in the super position at parallel processing of information probability amplitude for being in either 0 or 1 state.

Entanglements:
This means states are correlated even when physically separated.

Measurements:
When qubit measured it collapse in to one of the 0 or 1 state .but with certain probability determined by its super position.

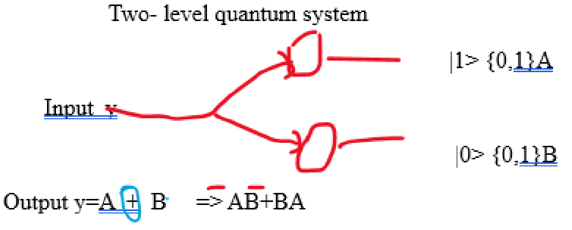
Increased qubit computational power:
Qubit allow the parallel processing and entanglements enabling quantum computer to potentially solve the problem that are interact with the classical computer.

Potential for new technology:
Quantum computing has potential for the revaluation field medicine, and AI.



Qubit is the two state (two-level) quantum mechanism system .the quantum display spin of the electron which two level can be taken as spin up and spin down or polarization of single photon. Which the two spin state (left handed and right handed circular polarization)

Can also be measured horizontal and vertical linear polarization quantum mechanism allow qubit to be the coherent super position of multi state simultaneously.



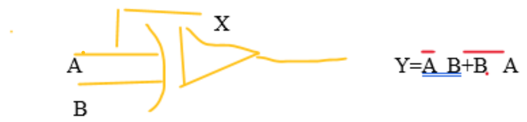
Classical binary bit:
Just opposite of the quantum computing (quantum bit) static physical state either 0 or 1

In classical system gets2 inputs either 0 or 1.

0	0
1	0
0	1
1	1

4 state are available in the classical computing . but quantum multiple state available simultaneously. In classical is 0 or 1 in quantum 0and 1 each state single bit information that a single bit due to its abilty to exists in a super position of state (0 or 1) that communication of both either 0 or 1 . it will select by the weightage of input in qubit.

C NOT GATE :
This mean controlled not gate basically implements a reversable EX-OR it can be used as



Truth tables are

Input	output		target output
Source	target	control qubit	A + B => AB=BA
A	B	X	
0	0	0	0
0	1	0	1
1	0	1	1
1	1	1	0

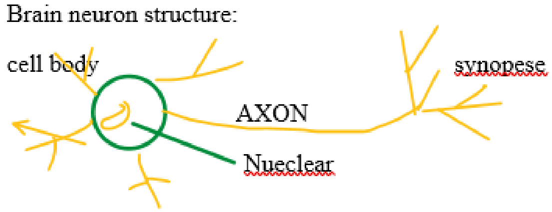
Neural networks:

Neural network is a method of artificial intelligence (AI) that teaches compute to process data in away that is inspired by the human brain.it is a type of machine learning (ML) called deep learning(DL) that are inter connected nodes or neurons is a layered structure that is resembles the human brain. Imaging the network of inter connected wires represents a connection between two neurons and the strength of each connection can be adjusted when the data flow through the network ..the neuron fires based on the strength of their connection overtime the network learn by adjusting the connection strength based on input data and desired output allowing the accurate prediction or decision.

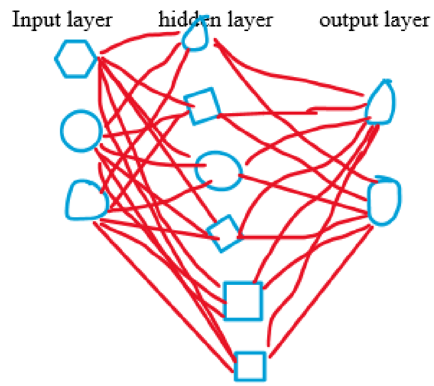
Inspired by the brain:
Neural network model offer the structure and function of the brain with its connected nodes (neuron) that communicate and process information.

Learning from data:
They can learn to recognizing pattern and make prediction from data by adjusting the connection between their nodes (neurons) .it is used various field that is image recognizing ,natural language processing and game playing.

Brain neuron structure:



Artificial neural network architecture:



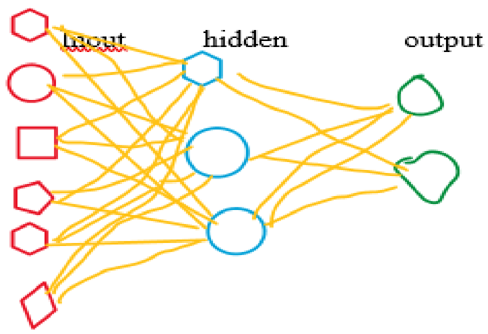
Neural network layer think to make source of data which rating all this other attributes here are the artificial tank that neural network performance,

Classification:
Neural network organize pattern or dataset into pre determine class.

Prediction:
They produce expected output from the given input;
Clustering:
Identify unique feature of data and classic find in to without any knowledge of process data.

Associating:
Train neural network to remember process when you show information various of pattern the network associated with most comparable various in its many and revert to the later.

Quantum neural network:



Quantum neural network are computational neural network model which are based principles of quantum mechanism . the first idea quantum neural network computation when probability independently.

They quantum mind which passes the quantum effect play a role of cognitive function most quantum neural network are developed as feed forward network similar to the classical computer the structure in take input from one output of the qubit and passes the input and another layer of qubit .this layer qubit qual in the information and passes on the output to the next layer eventually the path need to final layer of qubit the layer don't have source with meaning don't have the source number of qubit as the layer before and after it. The structure is based on which path to take simulate to classical compute with quantum and computing with quantum data .

II. CONCLUSION

The quantum computing is the sixth generation focus on the computer . which is rotate by electron or photons and also included the new particles which minimize the size of the computer and performance of the classical computer the classical, computer which is expected input and output. But in quantum computing unexpected output . which is quantum data . in classical is either 0 or1. . but in quantum computing is 0 and 1. Un predicted output user can not understand which is predicted that is super position and entanglements of the quantum computing .BRA-KET of the |0> and |1>

Each element have the two particles 0 => 0,1 and 1 => 0,1 in classical ,input ,hidden and output ->in quantum input ,hidden and output in classical more input in quantum computing hidden layer are more unexcepted but excepted output from the quantum computing compare to the classical computing . because it is focus on the sixth generation.

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