Chapter 13
Quantum Computing and the Qubit:
The Future of Artificial Intelligence

Sasi P.
Vellore Institute of Technology, Chennai, India

Gulshan Soni
School of Engineering, O.P. Jindal University, India

Amit Kumar Tyagi
https://orcid.org/0000-0003-2657-8700
National Institute of Fashion Technology, New Delhi, India

Vijayalakshmi Kakulapati
https://orcid.org/0000-0002-1753-3298
Sreenidhi Institute of Science and Technology, India

Shyam Mohan J. S.
GITAM University, India

Rabindra Kumar Singh
Vellore Institute of Technology, Chennai, India

ABSTRACT

A model of dissimilarity-based study is featured after studies and design. No statistical data are included whatsoever. Diving into quantum computing as the title suggests, introductions to the concept of Qubit are given. Future papers contain the advancement of quantum computing operations, shifting to quantum computers, developing intelligent algorithms for the new age machines (referred to here as quantum machines). The chapter assumes the requirement of knowing the evolution of intelligent machines in the form of an introduction.

DOI: 10.4018/978-1-6684-6697-1.ch013

INTRODUCTION

Mimicking the human brain has always been a dream for people across the globe for ages. Although it is believed by conservatives, pessimists that creating algorithms that could mime the neuron-clusters and their complex interconnectivity is highly improbable, we optimists (assuming the reader too) and researchers have been proving that we are a step nearer to the masterpiece every time we find a reasonable advance in the related area. Ever since 1943, when Walter Pitts And Warren McCulloch made the first computer model for the Human brain using "threshold logic" there was a thrive in humans against the impossibility which today is a clear proven possibility. Henry J. Kelley (n.d.)proposed the Back-Propagation (continuous) Model in 1960; this model was then inspired, and Stuart Dreyfus made a simpler chain rule model.

Understanding how intelligence works are complicated yet possible with proper knowledge of mathematical guess or probability as termed. For example, if you have only your touch-sensory neurons to observe things around, and respond to them, you would probably find that something hot touched you or of which shape it is but will be unable to find its material. Here comes the probability in your brain, if something you touched is in the shape of a wine glass your brain gets the message through the nervous system, and your brain guesses it is made up of glass, but unless there is some other evidence to prove the fact. Brain primarily depends on facts and data provided to it in past. Therefore, it is unimaginable and often not scalable for your mind, how a dark matter looks unless it is shown to you in past.

Figure 1. Often this is one self's brain when it is given some problem out of its scope, however intelligent one might be.