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Ability of Computers to Process Information Faster than Human Brain

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I. INTRODUCTION

Since the introduction of the first computers, many tasks have been made easier by the technology given its various abilities. Computer technology has since then continued becoming complex, to some point outdoing the human brain. Computers can be able to carry out a range of activities simultaneously and smartly compared to a human brain which, to some point, would only want to focus on one activity at a time. Computers have also been seen to conduct complicated tasks that human brains cannot handle. They can store vast amounts of data and retrieve it quickly, which is not the case with the human brain. The brain of a human being tends to forget some details, and it may not be as easy to retrieve the complete information as would be necessary. Therefore, computers have shown tremendous ability to process data quickly than human brains. This trait is attributed to a range of factors that this paper will dig into depths.

The storage system of a computer is sophisticated and adjustable. For daily usage of a computer, the majority of the users will find it comfortable working with 500GB storage (Luo, 2018). The storage system of the human brain is not adjustable and may not be able to process too much data at a go, compared to such amount of data that some computers use to run. The human brain works with the help of neurons. Some estimates vary on the number of neurons that a human brain has. A range of studies provides that about 100-200 billion nerve cells help in conducting various tasks (Luo, 2018). With this information, the ability of computer storage to be adjusted may place it a level higher than the brain in terms of speed of processing, retrieving, and storing the information.

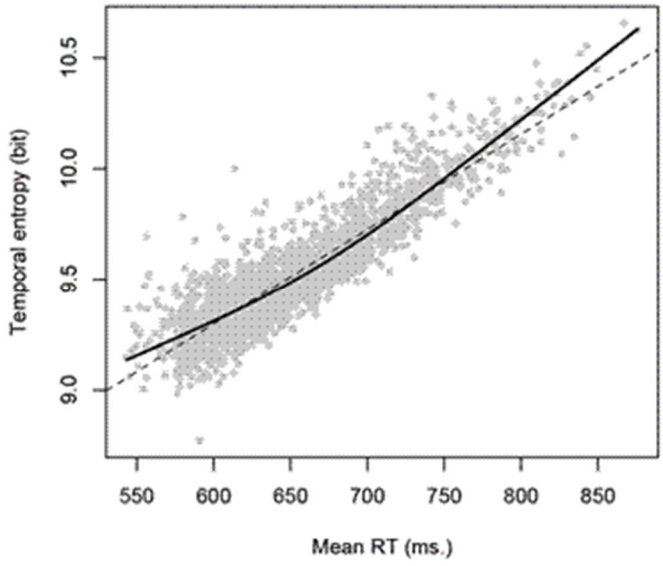

Figure 1: New Measure of Human Brain Processing Speed (Emerging Technology from the arXiv n.d.)

The computer has tremendous advantages compared to the human brain in terms of speed in doing basic calculations and other operations. Computers are currently performing arithmetic calculations like addition, subtraction, multiplication, and division, among other elementary calculations at high speed of up to 10 billion operations in a second (Luo, 2018). Compared to the human brain, the same elementary operations is far much slower. In the brain, information is encoded in the timing of the spikes. The highest frequency of firing in the nerve cells is about 1000 spikes per second (Luo, 2018). Further, synaptic neural transmitters play a crucial role in the functioning of the brain. Therefore, the swiftest synaptic transmission in the human brain takes about one millisecond. Regarding spikes and communication at the synapse, the brain performs highest about 1000 elementary operations per second, 10 million times slower than the computer (Luo, 2018).

Table 1: Comparison between Computer and Human Brain (Luo, 2018).

Properties	Computer	Human brain
Number of basic units	Up to 10 billion transistors	100 billion neurons 100 trillion synapses
Speed of basic operations	10 billion per second	Less than 1000 per second
Precision	1 in 4.2 billion	1 in 100
Power usage	100 watts	10 watts
Information processing type	serial	Serial and vastly parallel
Input/output for each unit	1-3	1000
Signal mode	Digital	Digital and analogue

In the perception of elementary operations, the computer outweighs the brain in that the computers can represent numbers with any precision as may be desired by the user according to the digits assigned for each number. Reliable evidence reveals that many quantities in the brain present with a variability of less percentage due to biological factors such as noise or exactness of 1 in 100 at most, which is millions poorer than in a computer (Luo, 2018). The operations that a brain performs, nevertheless, are not as slow or inexact. For instance, in tennis, a player can follow the ball's path when it is served at an extremely high speed of over 160 miles per hour (Luo, 2018). The brain further enables the players to move to the optimum spot on the field, prepare themselves by positioning the arm, and swinging the racket to hit the ball back.

Overall, a computer is faster in its operations compared to the brain, which is considered a bit slow. The computer has a higher precision than the brain due to a range of factors, including biological issues. Therefore, one would infer that computers have the ability to process information faster than human brains

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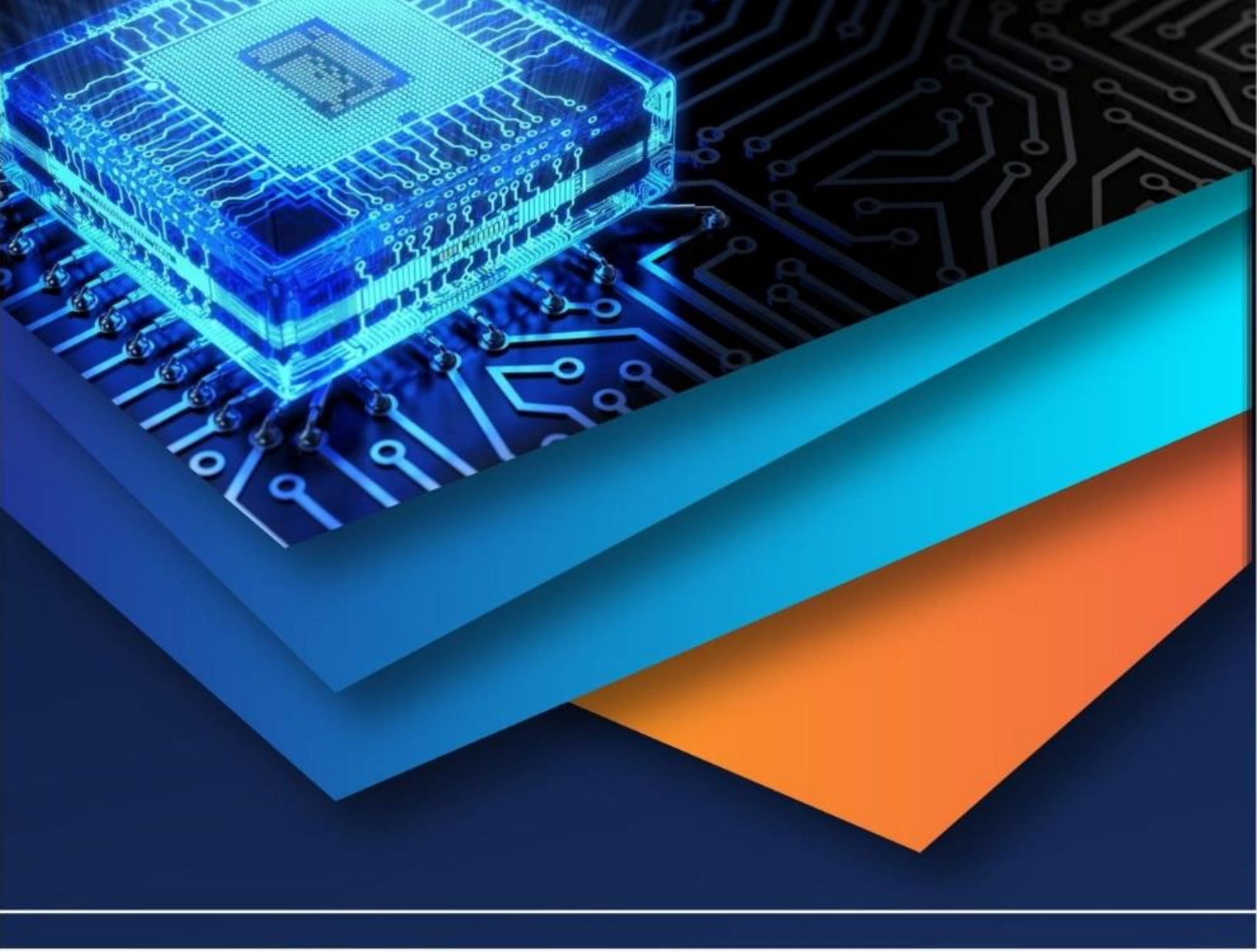

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