# Human memory and the computer essay examples

Technology, Artificial Intelligence

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Man created machine to semi, or fully, automate tasks that were otherwise resource hungry or redundant. Earlier, machines worked on a specific set of instructions that were hardwired into them. This limitation was outleaped when computer memory came into existence. Today, with the help of sophisticated hardware and advanced software instructions, we can instruct the machine to perform nearly anything. However, we did not stop here and attempted to provide a computer machine additional capabilities. We have managed to manufacture nearly every kind of machine sensor, for example, camera, gyroscope, speakers, microphone etc., which emulates the human sensory reception in a digital format. With the help of these sensors, computers can not only sense the observations and realize the information of the physical world, but also use these observations and information by storing and manipulating them in a digital format. In fact, computers in some way have surpassed the human capabilities in terms of sensing physical data, e. g. reading infrared radiations, capturing high-frequency sounds.

## Understanding the Human Memory and Computer Memory

The size of a human brain is determined by, but not confined to, the number of synapse connections in it. The size of a computer is determined by the different kinds of various memory components in it. At a bare minimum level, neurons in the brain of a human are similar to the registers in the memory of a computer. Both of them are responsible for storing and passing information. Although, it is arguable that the neurons work more as an analog system while the registers work as a digital system. However, in a simplified way, both work in a manner of an ' off' and ' on' state, just like the binary system of a computer. When neurons are not active, they are considered to be in the off state.

## Flow of Information

The human nervous system works on a feedback system. We sense a stimulus, like a hot touch on the hand or a sudden bright flash in the eye. The information about this stimulus is carried via the nervous system over to the brain or the spinal cord, where the data is processed and the output is carried back to the appropriate body part via the nervous system. A response is carried out, withdrawal of the hand from a hot object or blinking of the eye to protect itself. The concept of computer information flow and processing happens in a similar fashion. The computer has various input peripherals, such as a keyboard, mouse, microphone, etc. which are always ready to capture information or stimulus. Each peripheral has their own local memory that help in capturing and storing information on a temporary basis. This information is immediately collected in the RAM and the cache memory

of the CPU, and the data is processed to create a logical output. This output is then carried back to the peripherals responsible for displaying output, such as monitors or sound speakers. Since machines were particularly created with the idea to replace human involvement in regular work, the inspiration behind their anatomy is undoubtedly the human body and mind itself.

## Information Processing Capabilities

Although the human memory and computer memory share a lot in common, there are considerable differences in their capabilities of processing information too. With the advancement of electrical engineering, we have been able to fabricate computer memory chips which can defeat the human brain in terms of size, speed, and accuracy (Ahn et al 294–311). Storing information in the human brain requires repetitive learning and practice. Storing information on a memory chip merely requires the task of copying over that information in digital format. Moreover, with the deterministic behavior of computers, they will always provide the same output for the same input; proving their high accuracy with the processing of information. The human brain's mental capabilities can be shrouded by emotions or other physical distractions. Without the supercomputers today, it would have been impossible to perform calculations on the large data sets of information. In comparison to that, the average human brain can only work with a microscopic amount of data and that too at a very slow speed. In fact, today's space age computer technology cannot be replaced by human processing capabilities even if we had the extravagance of time and space to do so.

## Artificial Intelligence

The concept of true artificial intelligence (AI) balances on the expression where machines are capable of self-governing and making logical decisions, unbounded by any human intervention. However, today's actual artificial intelligence is far from this concept. AI (Brain Versus Compute) today is basically a marvel of advanced human capabilities of fooling regular people into believing that computers can think by themselves whereas the actual truth is that these AI machines are mostly bounded by human instructions. The computer still lacks behind the human brain in terms of creativity, flexibility or organic thinking. The human brain can organically make sense from a set of information, which might seem to be completely unrelated to a computer. For example, chat bots today can only hold a meaningful conversation within the domain of questions that they were trained to answer to. They cannot intelligently respond to information that they are unaware of.

## Conclusion

It is exciting to observe the similarities between the functionality of computer peripherals and the human body. Computers solving complex mathematical equations were given the computational strength and knowledge by the man himself. So, there is no doubt that the internal information processing in a computer or human brain is any different. It will take a lot of time and research before the mechanical complexity of a computer memory can match the biological complexity of the human mind. Hence, although computers are limited by the physical resources and the

programmed instructions, they are a digital proof of the human mind.

Works CitedLuis von Ahn, Manuel Blum, Nick J. Hopper, and John Langford. CAPTCHA: Telling humansand computers apart. In Lecture Notes in Computer Science, pages 294–311. Springer." Brain Versus Compute." Lucidpages. 1 Jan. 2014. Web. 22 Nov. 2014.(