

ACCESSING OF COMPUTER MEMORY LIKE HUMAN BEING

Vivek Kumar Sharma

Computer Science, Noida International University

vsharma.vs21@gmail.com, vivek.sharma@niu.edu.in

Abstract

The memory word has been creating a sensation among the researchers. In the era of information technology, many technologies have been developed to store and access information in and from calculators and computers. The human memory uses a vast and varied address to access information like the fragrances of flowers, sounds, and different weather conditions etc. Computer memory is accessed through pointers. The pointers are addresses, and they could point to information like human.

Keywords: computer memory, human memory and pointers.

Introduction

The memory is an essential part of data processing in electronic device and human brain. The intelligence of human brain and electronic device depends on memory. The computer uses the data structure to store the data but we don't know about the human brain that how the information is stored. The computer uses the pointer to access the address of storage data. Although, the human brain could not read by any scientific method but, in the psychology the various test is implemented for accessing the memory. The cues are used for accessing the human memory. These cues have vast and various type of item and scenario. The human brain takes input through perception and it is using a vast and various items and scenario. The human memory is not organized memory like computer memory. But the human memory has large database of pointers or cues to access the memory. Although human memory is uncontrolled, but it provides improvisation and intelligence to take decision. The human brain uses the cognitive process to learn and store also the techniques to solve the problem. The computer can perceive the information from the open environment by the help of different type of sensor. The sensor may perceive various type of information.

Objective

The objective of the research paper is enhancing the intelligence of computer. The memory accessing like a human memory would make a computer efficient to take decision improvises. The human memory has a large database (guts) of information and human brain uses this information to take decision.

Memory

The memory is conjunctive of two words “Memorandum “+ “Story “.Where the memorandum is representation of creation of stored contents in a space with specific structure. So, every real objects (creation) of the universe fall in this category. Because the real object has the physical boundary or outfits so that is why called physical memory. When reflection of images, vibrations of sounds, fragrances offlowers and sweet or pungent dishes are stored in electrical, chemical and other logical forms then it is called logical or imaginary memory. The computer memory and human memory both fall in the category of imaginary or virtual or logical memory. So far, the notion of memory is only the imaginary memory. The computer memory is defined in terms of flip flop, registers, semiconductor, magnetic or laser-based memory. When a circuit do not show the changes in the state of output even after the change set and reset then unchangeable output called memory. The output in binary format remains unchanged and by the ASCII code it converts into text, pictures, sound and video etc. that also not change and stored in memory. In terms of human memory, memory itself a wide research area that is associated with the different types of memory. How to sense the information through the different sensors and how the information storing in short term and for long term.

There is different cortex of the brain associated with the different types of memory. The entorhinal cortex sends the information to hippocampus and information store here permanently. So, the data analysis of hippocampus in terms of genes, proteins, neurons, blood pressure and demethylation of cortisone would providing the proper functioning to store the information permanently.

Computer Memory

- Primary Memory-RAM
- Secondary Memory-SSD/Hard Disk
- Virtual Memory-Logically Extended Ram
- Cache Memory-Associative Memory
- Register Memory-Flip Flops
- Buffer-Temporary Memory

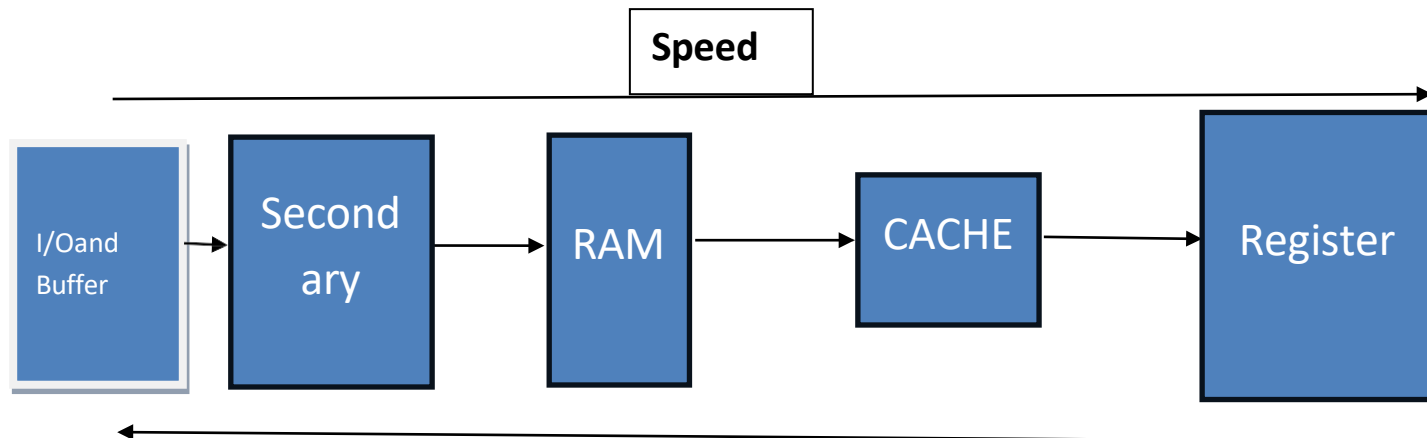


Figure1:OrganizationofMemory

Human Memory

- SensoryMemory
- ShortTermMemory
- LongTermMemory
- Episodicmemory
- DeclarativeMemory(Explicit)
- ProceduralMemory (Implicit)

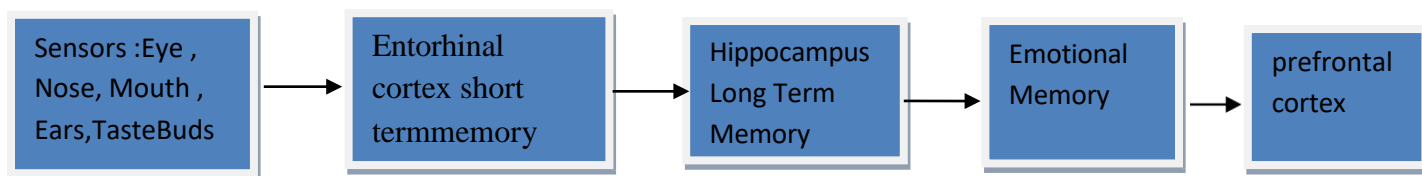


Figure2:Humanmemory

Pointer and Scenario

The pointer is a point that points to an address. The pointer holds the address of a location. The location stores the data i.e. character, text, picture, video, sentiments etc.

The pointer is generally a combination of numbers, characters, icons, sounds, thumb impressions and retina scanner. The different type of sensors is used for take inputs. Although the large scale of pointers is developed but computer is still not intelligent.

The scenario is the combination of multiple inputs like audio, pictures, fragrance, taste and shape etc. The episodic memory stores the scene or scenario of events or incidents with combined inputs.

The pointer points to the particular data and scenario is the combinations of different pointers represents the all entities and patterns in the universe and observations the methods of entities and patterns convert into supervised, unsupervised and reinforcement learning etc. could be used as stored procedure or register transfer languages in the computer.

Cues and Context

The cues are items and scenes. The cues may be different type of colors, fragrances, shapes, emotions, geometric structures, images, sounds, events, patterns, incidents, and episodes etc. The cues are used for accessing the human memory that is stored in short term, emotional, long term, episodic form. There are associations between different cues. The human brain perceives the different information as electrical and chemical signal those converted form images, sounds, text etc. The brain uses the different processor in the different lobe like visual processor process the signal received by the nerve cell associated with retina.

There are a lot of research those indicate that computer and human memory have the same working pattern as a new research human memory also process the chunk of memory and memory organize like computer in different organ like hippocampus, basal ganglia, amygdala, and prefrontal cortex with thalamus and hypothalamus.

Methodology

The observation of human memory depends on human behavior. The study of psychology based on study of human behavior. The science is based on parameters, equations and model. The cognitive science is based on the study of brain that is associated with cognitive function like movement, learning, intelligence etc. Although, there have been developed different model like Compound Cue Model, Spreading Activation Model and Distributed Model. There are two different methodologies and cognitive psychology provides the bridge between them. This methodology uses the various pointers and scenario to store the data and access the information just like a cue and context. There would be developed a virtual environment to perceive the

information. The virtual environment will be integration of various type of sensor and they will work on real time, distributed, and multiprocessor system.

The computer memory stored in the electronic circuits like flip flops, registers, capacitors, and semiconductor etc. The real time operating system, distributed environment, and functional programming like python (interpreter) have increased the speed of accessing memory, and object recognition by deep learning with the mimic of biological neural network supporting to real time processing to very big data like human. The quantum computing (superconductor), and DNA chip development could simulate the computer memory with human memory.

Conclusion

The computer is a human model but it has various limitations. The limitations can be removed by the observation of human behavior and cognitive science. Most of the scientific research are consequences of observation of nature.

The cognitive psychology is study of human brain and study of human brain and memory can improve the efficiency of a human model. The third phase of AI is cognitive AI and, in this phase, the human model could exactly mimic the human memory.

References

- [1] MY Lim, RAylett, PA Vargas, WCHo... "Human-like Memory Retrieval Mechanisms for Social Companions"-The 10th International..., 2011 -dl.acm.org.
- [2] Douglas L. Hintzman, MINERVA 2: A simulation model of human memory, *Behavior Research Methods, Instruments, & Computers* 1984, 16 (2), 96-101.
- [3] E Tulving, "Organization of Memory" The cognitive neurosciences, 1995 -cognitrn.psych.indiana.edu".
- [4] Peter W. Foltz, "Models of Human and Computer Memory Information Retrieval: Similar Approaches to Similar Problems", ICSTech Report 91-03.
- [5] Steyer's, M. & Griffiths, T.L. (in press). Rational Analysis as a Link between Human Memory and Information Retrieval. In N. Chater and M Oxford (Eds.) *The Probabilistic Mind: Prospects from Rational Models of Cognition*. Oxford University Press.