Strategies for remembering and better memory

Memory

1. Introduction

Memory is the key to live a meaningful and normal life. If a person cannot remember anything about his past how can he understand the present, or even plan for the future? Psychologically, memory is defined as “ the structures and processes involved in the storage and subsequent retrieval of information” (McLeod 2007). Therefore, memory is naturally important to the act of learning, and for functioning and living in any given way every day. The things that memory assists people with memorizing can be visual, semantic, and auditory. There are also three stages of memory, which are “ encoding”, “ storage”, and “ retrieval” (McLeod 2007). The three stages of memory help show the process of how someone remembers something by dividing it into clear and easy steps. For our brain to really store and understand the information that is regularly being given to it, the information needs to be changed into something the brain is able to process, which can be data in the forms of pictures, sounds, or meanings. If a person repeats something out loud as he tries to remember it, the repetition is an example of auditory encoding, which seems to be a large part in short term memory, which will be discussed later with more details.

For hundreds of years scientists have tried to understand and analysis the process of the human brain, particularly memory since the days of Aristotle when he lived in the 300s B. C. E (Morris 2014). He began by comparing making memories to making wax sculptures, which can be accessed at a later time from whichever room they were stored in, which is known as the “

storehouse metaphor” (Morris 2014), and has had some popularity among thinkers since that time. The computerized age has given the storehouse metaphor a big boost, and memory is now regularly compared to actively searching through folders in one’s mind for a specific file, just like a computer. However, the storehouse model does not accurately reflect what is happening when a person remembers something, because the memory is not a copy of what really happened, but it is actually embellished by who the person receiving the information is. Their biases and past experiences, and their worldview will all “ corrupt” the copy that they see, store, and remember, and it will do so without the intention of the person. Recent speculation about how memory functions by philosophers such as John Locke and John Stuart Mill focuses on links and why a link might form (Bower, 2000). Morris gives an example of how “ rbocoilc” can be recognized as “ broccoli” more easily the more often or the more recently a person has seen the word “ broccoli”.

Cognitive memory seems to be most easily described as “ working memory” (Gibson, 2014). It includes processes such as “ attention”, “ working memory”, “ processing speed”, “ long term memory”, “ visual processing”, “ auditory processing”, and “ logic and reasoning”. All of these things are separate from each other. However, cognitive memory works in conjunction with some or all of the parts at the same time. For example, parts of cognitive memory focus on many ways of processing such as speech, visual, and auditory.

2. Related work

It would be difficult to exaggerate in the significance of understanding the deep influence of “ environmental context” on human memory. Considering the difficulties you may face when you want to recall a person’s name. You will be able to remember the individual’s name and some of his/her personal information. if you placing his/ her face in “ the original context”. human memory does its functions to retrieve the information by activating the contextual cues. Probably the human mind recalls some information that is related to how strong the association among the context that is used for recall and the information of the target person or object. Moreover, the probability of doing a recall successfully is higher in individual things if a set of contextual cues are available. For example, There are two groups of students who have been taught material in room A. If you examined the both of groups on the material. You will see the group of students who have been taken the exam in same room (A) had better perform and recall than the another group of students who have been examined in a various room. The context of the room can play a big role of enhancing the performance on a recall test. Some researchers are shown that when the number of contexts are increased. The information might be obtained easily “(studying for a test in 5 rooms vs. 2 rooms)”, performance on recall tasks are improved too. When the performance increase due to the effect of the room context on recall or related to the ability of individuals to recall information depending on their environment.

2. How It Works

Human memory uses sensory memory, short term memory, and long term memory while it works to store information. Although short term memory is

brief by definition, sensory memory seems to be even shorter (Mastin, 2010). Sensory memory uses information gathered from the senses, such as touch, taste, and smell. This information is stored as a memory and stays after the experience has occurred, but fades shortly after that it seems. There is a type of sensory memory that is being called echoic, which lasts slightly longer than that and is describing the information gathered by the auditory sense, but the length of time is still somewhere less than a second. Attention or focus when particular things are stimulating the senses is required to remember those stimuli.

Short term memory lasts for a lot longer than sensory memory, which means it can be recalled for up to a minute and can usually hold about seven articles for immediate recall (Mastin 2010). Another term that can be used for short term memory is working memory. This is the type of memory used for immediate translation, as well as doing something as simple as reading a sentence from beginning to the end. Without having short term memory, you would not be able to remember the meaning of the beginning of the sentence by the time you finished reading it. Repeating something that you wish to remember mentally, out loud, or making connections between the new information and something you think is important can help change the location of the new information from the short term memory shelf to the long term memory shelf. Your environment may also help your ability to retain the information you learn for longer periods of time like namely relaxing places. Short term memory storage is stored in places of the brain that are close together and are very loose.

Long term memory, as you can tell by its name, lasts for a longer period of time than does short term and sensory memory. The odd thing about long term memory is that it seems to be able to store information for an unlimited amount of time and possibly can hold an unlimited amount of things, even though people seem to forget things every day (Mastin, 2010). The process of memorizing involved in storing information for a long term requires the actual physiological change of the neurons involved in storing that particular information. Long term memory takes place all over the brain and forms lasting connections between those places. Just like video cameras or internet connection, synapses between the neurons in the brain that represent memories can suffer from interference because of other memories.

3. How Humans Think

Like mentioned before, humans would be nothing without the ability to remember things, for memories are what makes them people. Likewise, everything that is important to people must be processed through their brain, which makes understanding how the brain works, and how humans think, an important field of study. In terms of energy, the brain consumes a lot of energy, for example, Robert Lawrence Kuhn interviewed Rodolfo Llinas, who says “ At about three pounds, it’s 2 percent of the body’s weight, yet requires 25 percent of the body’s energy” (Kuhn 2014). Movement requires the ability to know you want to move, and therefore the ability to assess the outcome of that movement, which is all “ internalized movement” (Kuhn 2014) and all takes place before physical movement. Depending on the particular places within the brain that become activated when a person looks at something, it determines whether or not they will like it, and that reaction

for the same thing will be different per person. Scientists are still trying to unlock some of the processes of the brain.

4. Recognition, Recall

Recognition and recall are two very different concepts in the grand scheme of things. Recognition is just the act of recognizing information that you have seen before. For example, someone is providing you with a list of possible answers and you have to choose the right one based on what you have seen before as a response. Recalling is the act of remembering or recreating, and possibly utilizing information that you have learned before (Carbeza et al 2000). For example, to recall something, you need to spill it out onto the page as close as you can to the original information, depending on what the recall test is asking you to do. Recognition was probably more important than recall in the past, because it is easier for the human brain to recognize something than it is to recall information without something to jog the recollection.

These prompts for recollection are better known as contextual cues. Contextual cues are smaller bits of information that are related to the chunk of information that a person wishes to remember. They are easier to store in the memory, but at the same time they are not the whole picture. When the cue is taken off of the memory shelf, the picture that it helps the person remember is brought into focus, although this might be a narrow focus (Chun & Jiang, 1998). Contextual cues can also be derived from that bigger picture through the senses without the person ever even realising that it has happened. There is a program called YouPivot, which is focused on creating

computer based searches that act in similar fashion to the human memory when it is using contextual cues to find memories or other stored information (Hailpern et al 2011). Contextual cue and YouPivot will be explained later.

5. YouPivot

When you were working on documents or sites, and you cannot remember what their names were exactly but might remember the action or event that interrupted your work. Environmental factors can probably help you to recall the required information. For example, users might be able to remember the song which was playing, a phone call which caused interruption to them, “ their physical location”, or even some files or websites which were open during their work. These temporal activities are known as contextual cues Hailpern, Jitkoff, Warr, Karahalios, Sesek and Shkrob, 2011). Contextual cues are a main element of human memory. A contextual cue can be defined ” any event/object that has a temporal relationship to a search target”. For example, a Twitter message which was sent by a user during working on a document. if the user looking for that Tweet (a Twitter message) in order to find his/her document. Then, the Tweet considers a contextual cue. The search that based on contextual cues can be defined as Contextual Search. (Hailpern and et al, 2011).

YouPivot is a contextual history based search tool that links the gap between the human thinking to remember things (recall) and searching. YouPivot allows the users to make a search through “ their digital history” such as files, URLs, physical location, meetings, and events for the context which they can remember. You will see how YouPivot works through a scenario of

Sarah and how she interacts with. Sarah is a graphic designer, she is working to develop a new website and designing a presentation for the WeSaySo Cooperation. she remembered that it would be useful to take screen shots of some websites which is related to her design. As first step, she wants to find the website (Hailpern and et al, 2011). There are different methods to find the website by using YouPivot:

1. Search and Pivoting

Sarah tries to remember the website's name but she forgot the title, domain and when the last time she saw that webpage. A normal web history is not able to help her because there are so many items. The web history has many titles which do not show the one that Sarah wants it. The only information that Sarah can remember is, she saw the website for the last time around the same time when she had a meeting with " the CEO of WeSaySo, Mr. Richfield". Sarah accesses her YouPivot interface and started searching for Mr. Richfield. YouPivot shows a list of history that is compatible with her query. She finds the meeting in the row which is highlighted in the history list and sees a Pivot button at beginning of the row. When Sarah pressed on the Pivot button. It shows a new history list and around 38 minutes of data. Sarah checked the calendar to know when it was her meeting with Mr. Richfield. She found it " as being 30-minutes long". YouPivot calendar records the period of time from the action starts until the end as pivot time period "(plus a small buffer on each side for temporal context)" (Hailpern and et al, 2011).

2. Temporal Context: Before, During and After

When Sarah did not find the website in the activities that were shown by YouPivt history during her meeting with Mr. Richfield. Sarah started thinking if the website was opened before or after her meeting. She looked at the YouPivot interface in the top. It shows “ a 24-hour visualization of Sarah’s activity”(Hailpern and et al, 2011). The visually stored data during 24-hour has a resizable region and the ability to drag it. Sarah can change the position of the selected area to be able to adjust the quantity of data which is appeared in her her history list. She sees on both sides of the selected region “(representing the meeting with Mr. Richfield)”, There are around 3 hours of high activity. She changed the size of the selection area to include the activity before and after the meeting with Mr. Richfield “(Hailpern and et al, 2011).

3. Visualization of Activity

After giving a quick look to the list of activity which was selected. The targeted website is not shown at Sarah. Suddenly, she remembers that the website was seen by her when she was checking many pages of Gmail and Facebook”(Hailpern and et al, 2011). There is extra details that represent the selected region of each history by visualizing the items activity over time as a stream graph. The visually stream graph is located under the region of the 24-hour visualization. Sarah can notice a large sample of the blue color for Facebook’s icon and a large sample of the red color for Gmail’s icon. Sarah is able now to resize and refine the viewable area by using the 24-hour visualization or Pivot one of the web pages of the Facebook that she accessed. Moreover, she improves her time frame and the ability to examine the activity of the time period (Hailpern and et al, 2011).

4. Ambient Context Display & Filtering

When Sarah reviews the new context, she sees a large area of the color blue with the quantity of activities at Facebook. By looking at YouPivot interface in the left side, there is a list of the source icons and group of key terms that took out from the pages to represent the activities of the displayed time period. The source icon is shown with bigger size depending on the number of the actions that occur in the visible time range. When Sarah is looking at the list of terms and domains. She quickly sees that the largest icon on gardening and finance and at the top the term list. This context lets her remember that the targeted website was for banking and gardening. When she “ clicks on the terms in the list, dynamically applying them as filters on her data”. Then, she clicks all the websites that is found. She locates the desirable website. She sees a Microsoft Word document that is equivalent to the filters in her list. While she was doing a research on “ website layouts”, wrote notes to herself on a Word document file (Hailpern and et al, 2011).

Conclusion

Human memory and brain functions are an inescapable part of existence. It gives lives meaning, and through contextual cues, sensory, short term, and long term memory, as well as the physiology of the brain, the concept of memory begins to take shape. This paper focuses on explaining some of the basics of memory, but there is much more to be researched.

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