
Designing with the Mind in Mind

CHAPTERS 7, 8 AND 9

READING SUMMARY

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Chapter 7

Our Attention is Limited Our Memory is Imperfect

Short vs Long term

Short term ranges from a fraction of a second to several seconds up to a minute. Long term memory covers the rest of the memory situations. They are not separate physical stores of memory in the brain.

Long term How your brain reacts to senses greatly depends on the context in which you are and the features you are experiencing. The more similar two situations, the more overlap there is between brain activity. The more a neural memory pattern is reactivated the stronger it becomes and therefore is easier to reactivate and this signifies long term memory. Neural patterns with high recall, strong, and easy to reactivate.

Error prone Human brain has unlimited memory. Everything stored in heavily compressed in lossy format. Different memories have different levels of detail

Weighted by emotions Emotions can change how well you remember something and what you feel when you think of that memory

Retroactively alterable Your memory of an event can change over time and be morphed into other memories. Nothing is 100 percent accurate.

Implications of long term memory

Avoid making software that burdens longterm memory by not making people remember things often. Password authentication breaks this rule. Security questions also break this rule. Editor shortcut key combinations break this rule. Keep your shortcuts consistent.

Short term Short term memory is not a store and instead is just a temporary place where senses go to be worked on. Each sense has it's own small short term memory. The brain fetches data from these sense caches like a queue. Also called working memory and is equal to the focus of our attention. Has low capacity and is volatile. Anything one can be aware of can be stored in short term memory Can contain 4 plus or minus two items if they arent chunked together

Implications of short term memory

Dont require people to remember too many things at one time

Modes Avoid modes, or provide mode-feedback because people can't remember. Modes are like VIM, which is great, advantages obvious. Disadvantages are you can run into mode-errors. Not knowing which mode you're in.

Search Results Remember to show the search terms in the search results page because people can't remember what they just searched for a few seconds ago.

Instructions Show instructions to the user when they need to use them because they cannot remember all the steps when they are on the next page.

Chapter 8

Limits on Attention, Shape, Thought and Action

We focus on our goals, not our tools

We put all our attention into achieving our goal and very little on how to use our tools. Therefore we sometimes continue using our tools inefficiently as long as we achieve our goal.

We use external aids

We change our environment to store information inside of it instead of using our short or long term memory. Therefore software should visually indicate where the user is in their task so they don't have to memorize anything. Ex. read and unread emails being highlighted and grayed out respectively

We follow information scent toward our goal

Humans click on things that indicate that they will lead to the goal they want to achieve.

We prefer familiar paths

People do what they are used to instead of exploring new paths through the software because their attention is limited. Problem solving places heavy load on attention and short-term memory. Classic case of vim users sticking to the few commands they know to achieve full functionality instead of adding to their list of known commands

Our thought cycle: Goal, Execute, Evaluate

We form a goal. We execute actions to try and make progress toward that goal. We evaluate whether the actions worked and repeat until goal reached.

Provide clear paths to the goal. Software concepts should be based on the task rather than the code. Provide feedback to the user so they can evaluate correctly

After we achieve a task, we forget cleanup

Once we are out of the goal, execute, evaluate loop for one specific goal, we forget about that thought stream and don't clean up any mess we made while reaching that goal. To avoid this, interactive systems should help the human clean up or at least remind them in the evaluate portion of the loop. If possible the system should clean up for the human so you can save their attention for more important tasks.

Chapter 9

Recognition Easy, Recall hard

Recognition is Easy

Patterns of activity can be activated in two ways: By more perceptions coming in from the senses, and by other brain activity. If a new perception comes in that is similar to an old you, you have recognition. We can quickly recognize faces.

Recall is hard

Recall is trying to access long term memory without reactivating old neural patterns with a new instance. It is possible but much harder. It is also prone to more errors. People use mind palaces to help with recall.

Recognition vs Recall

Seeing something and choosing it is easier than recalling something and typing it so software should do the recalling for the user because it has memory. People can recognize pictures easily so use those instead of text to convey function.

Use thumbnail images to depict full-sized images Recognition doesn't care what size the objects are, we can still recognize them. Therefore to fit more data into vision at once, thumbnails are a good idea.

The larger the number of people who will use a function, the more visible the function should be Make it so the least amount of people have to recall where a function is located in software. If it is commonly used you don't want people to fail because it will add up to a lot of people.

Use visual cues to let users recognize where they are Visual recognition is fast just like pictures mentioned above. Slight changes in visuals can help users find out which part of your application they are currently using.