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Active Long Fixation Correlates with the Formation of Long-Term Memory

Introduction

- I have been researching on the kids video using the glass-type eye tracker. My major is cognitive science, that minority members in this lab major in, so the main research question and the methodoloy may unfamiliar with you. But the content is not far from the cog-projects in this lab, Doyak, and some part of HRI.
- Especially, this is a part of my master thesis and planned to submit to the CogSci 2015, helpful and constructive comments are earnestly needed.

- This is a screenshot from the movie Matrix in 1999, Neo tries the system matrix demo version with Morpheus, while walking in the street, he is unescapably attracted by a woman in red dress.
- All other men are wearing the black suits, so she has a contrast effect. This is called a bottom-up processing. However, there is no pure bottom-up. These two parts (pointing) are computationally almost equally salient portion, but easily neglected.

- Therefore, this guides us to view the attention with the perception-action cycling.

- Attention enables us to focus to something potentially interesting, it leads us to an efficient way to achieve a goal, through the cycling we can think more, in other words, it helps to handle a cognitive load.

Long Fixation in Reading

- For a momonet, please try to read this sentence in mind. (waiting)
- You may have a problem with this word. “adumbrated” means to sketch something, in a tentative way, or to roughly or briefly states something. Now, are you familiar with the sentence?
- Actually, Inhoff and Rayner studied the influence of word frequency in the eye movement. The figure in the right shows the low frequency tend to receive a longer

gaze duration. They explain this phenomena as the indicator of the cognitive processing time.

- This is the case in reading task. What about the wathcing task? The watching is totally different task to measure the eye movement. Because the visual stimuli are constantly changing, the visual feature of a single frame is not help, time series analysis of the video stimuli does not guarantee the precise accuracy to study on the relationship with fixation duration.
- So I think I should narrow down the feature of video, I come up with the affective feature.

Arousal and LTM

- This is Russell's milestone. He draws the mental space of emotion in the two-dimensional space with a statistical approach. I think you have it in Doyak session. I was surprise when I notice that this paper has been cited over 7,000.
- Cahill et al. have a distinctive result on that, the emotionally arousing events, in this experiment, movie clips, more recalled by the viewers. They attribute those effect to Amygdala interacted by the hormonal systems. Two-star means those two different results are statistically significant with the p-value less than 1 percent.