COMP3511/9511 Human Computer Interaction

Tutorial and Laboratory 8 (Week 4)

Agenda

- CLT – *50 minutes*
- Memory - *30 minutes*
- Problem Solving – 30 minutes
- Wrap Up – *10 minutes*

Aim

In this laboratory, you will complete a number of memory exercises, which will help you to understand the role that memory and knowledge play in the successful design of interfaces.

We will also be investigating some of the effects proposed by cognitive load theory (CLT). The aim of this exercise is to get you more familiar with the application of the different cognitive load effects and how they can affect a user's experience. You will use your OneNote design diary to complete the exercises, which your tutor will check.

We will finish off by looking at some problem solving strategies, where you tutor will describe some of the cognitive applications of these to websites.

Background Reading

Memory and Cognition
Preece (2019), 5th ed., Interaction Design: Beyond Human-Computer Interaction, Chapter 4 Cognitive Aspects, p101-134 (skim whole chapter for a good overview)

Sweller, J. (1993) 'Some cognitive processes and their consequences for the organisation and presentation of information', *Australian Journal of Psychology,* Volume 45, Issue 1, p1-8.

van Merriënboer, J., & Ayres, P. (2005) 'Research on cognitive load theory and its design implications for e-learning', *Educational Technology Research and Development*, Volume *53,* Issue 3, p5-13.

Memory Exercises

30 minutes

There will be a series of exercises done in class, that relate to the memory lecture last week. Your tutor will lead you through the examples as giving them you here would spoil the exercises.

Cognitive Load Theory

50 minutes

Using **one** of the three websites below:

http://www.lingscars.com/
http://www.bbc.com
https://www.service.nsw.gov.au

Consider the different cognitive load principles and analyse the website you have chosen based on the CLT principles. You will have 20-30 minutes to analyse your website in-depth, you will record all your observations with any relevant screenshots in your OneNote design diary.

The principles you need to consider are:

- Split Attention effect
- Redundancy effect
- Modality effect
- Transitory information effect
- Expertise reversal effect
- Reduce search
- Diagrams

Remember that you might not always find examples of each of these effects in your website. After you complete the task, your tutor will choose some of the examples and put them in the OneNote collaborative space for discussion as a class. If there are other glaringly obvious design issues, feel free to note these as well in your OneNote design diary.

Problem Solving Exercises

30 minutes

There will be a series of exercises done in class, that relate to prior knowledge and problem solving. Your tutor will lead you through the examples as giving them to you here would spoil the exercises. If you have seen any of these exercises before, please do not spoil them for the other students.

Wrap-up and Marking

15 minutes

Consider and reflect in your design diary:

- What is the importance of the Think Aloud Protocol?
- How do different heuristics and design principles tie in with Cognitive Load Theory and its related effects? Choose one heuristic and link it to the CLT effect.