

Human Computer Interaction (071010-1) Fall 2018 Final Exam (12/12/2018)

Instructor: Kyoung Shin Park, Applied Computer Engineering, Dankook University

The final exam will be a take-home exam, handed out on Wednesday December 12th in class, and **due by Wednesday December 19th by 23:59 PM**. Please, turn-in via electronic mail by emailing MS Word doc or Adobe Acrobat pdf file to the instructor, kpark@dankook.ac.kr. Please put your name and student ID on the exam you turn in.

This is an individual exam, to be completed without the aid of other students in the classroom. All of your answers should be in your own words using complete sentences, NOT just spitting back quotes from publications, books, lecture notes, or web pages. Answers that are direct copies of sentences from the book will NOT receive full credit. In answering the exam questions, it is crucial that you use citations of readings and outside publications that are relevant to your arguments (except the lecture notes from this class).

The question 1-7 will require short written responses (more than 1 page per question). The question 8 and 9 will require little longer (more than 2 pages per question) written responses. The question 10 to 12 will require much longer (more than 3~5 pages per question) written responses. The questions will ask you to go into detail on a particular topic, and also to make some argument or new application of your knowledge.

1. Describe Don Norman's principles of interaction design: visibility, feedback, constraints, mapping, consistency, and affordance.
2. Describe the interface metaphor and discuss the benefits and problems with interface metaphor.
3. Describe Ben Shneiderman's principles of Direct Manipulation and what are the advantages and disadvantages with Direct Manipulation.
4. Describe the most popular principle about the human memory in UI design, 7+/- 2 rules.
5. Describe Human Processor Model and discuss Human Factors in user interface design.
6. Explain the techniques for getting the user's attention in user interface design.
7. Explain Don Norman's Theory of Action (1986) with your selected example and discuss Gulf of Execution and Gulf of Evaluation in interaction design.
8. Compare and Contrast these analytic evaluation methods: Cognitive Walkthrough, Heuristic Evaluation, GOMS (including KLM) Model, and Review-based Evaluation.
9. What is an error? How to prevent user errors? (<https://insightchaos.com/2015/05/08/preventing-user-errors/>) Discuss "mental model" in terms of understanding what leads to errors.
10. Read this article, "**Learning Visual Importance for Graphic Designs and Data**

Visualizations” and discuss the principles of effective visual designs for data visualization.

11. Watch this video **“What future for augmented reality?”** from [“http://www.bbc.com/news/av/technology-41419109/what-future-for-augmented-reality”](http://www.bbc.com/news/av/technology-41419109/what-future-for-augmented-reality) and summarize its technological principle and your lessons learned from this video.
12. Design your multimodal interface (using latest technologies) for multi-user interactions on the interactive digital signage. Investigate three or more applications that you are interested in to design multimodal interface for multi-user large display and describe the basic system flows and user interaction designs in detail. Also, how will you evaluate your system to be effective?