

# Human-Computer Interaction

## *PhD Qualifying Examination, Fall 2011*

“Human-Computer Interaction (HCI) is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.”

— 1992, *SIGCHI Curriculum Development Group*

The HCI PhD Qualifying Examination seeks to test the following:

1. Knowledge of the breadth of research topics in HCI (e.g., accessibility, information visualization, computer-mediated communication),
2. Ability to establish principles in HCI (e.g., embodied interaction, Fitts' Law) into new research (e.g., studying phenomena around computer use) and practical problems (e.g., designing a user interface),
3. Differentiate and select
4. Proficiency in research design and data analysis for human-centered computing.

Students interested in taking the HCI Qualifying Examination are strongly advised to take CS-570, *Introduction to Human-Computer Interaction* and CS/Psych-770, *Human-Computer Introduction* or equivalent courses at another institution. The majority of the reading list below is made up of the readings from these classes. Those added for the qualifying exam are marked with a star. The list below is an **interim** set of readings for Fall 2011 and is subject to change for future Qualifying Examinations. The readings are categorized by topic and sorted by publication year. The readings can be accessed only from the campus network or using the university [VPN](#) system.

## Reading List

### *HCI Principles & Fundamentals*

- Card, S. & Moran, T. (1986). [User technology—from pointing to pondering](#). In *Proceedings of the 1986 ACM Conference on the History of Personal Workstations*, pp. 183-198.
- ★ Grudin, J. (1994). [Groupware and social dynamics: eight challenges for developers](#). *Communications of the ACM*, 37 (1), 92–105.
- Ellis, C. A., Gibbs, S. J., and Rein, G. (1991). [Groupware: some issues and experiences](#). *Communications of the ACM*, 34 (1), 39–58.
- Weiser, M. (1991). [The Computer for the 21st Century](#). *Scientific American*, September 1991.
- Nardi, B. (1996) [Studying context: A comparison of activity theory, situated action models, and distributed cognition](#), In B. Nardi (Ed.) *Context and consciousness: Activity theory and human-computer interaction*, pp. 69–102.
- Hollan, J., Hutchins, E., & Kirsh, D. (2000). [Distributed cognition: toward a new foundation for human-computer interaction research](#). *ACM Transactions on Computer Human Interaction*, 7 (2), 174–196.
- Nass, C. & Moon, Y. (2000). [Machines and mindlessness: Social responses to computers](#). *Journal of Social Issues*, 56 (1), 81–103.
- ★ Myers, B., Hudson, S. E., & Pausch, R. (2000). [Past, present, and future of user interface software tools](#). *ACM Transactions on Computer-Human Interaction*, 7 (1), 3–28.
- Cassell, J. (2001). [Embodied conversational agents: Representation and intelligence in user interfaces](#). *AI Magazine*, 22 (4), 67–83.
- Walther, J.B. and Parks, M.R. (2002). [Cues filtered out, cues filtered in](#). *Handbook of interpersonal communication*, pp. 529–563.
- Whittaker, S. (2003). [Theories and methods in mediated communication](#). In Graesser, A., Gernsbacher, M., and Goldman, S. (Ed.) *The Handbook of Discourse Processes*. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 243–286.
- Grudin, J. (2005). [Three faces of human-computer interaction](#), *IEEE Annals of the History of Computing*, 46–62.

### *Study Design & Data Analysis*

- ★ McGrath, J. E. (1995). [Methodology Matters: Doing Research in the behavioral and social sciences](#). In R. M. Baecker, J. Grudin, W. A. S. Buxton, S. Greenberg, (eds.), *Readings in Human-Computer Interaction: Toward the Year 2000*, pp. 152–169.
- Hinton, P.R. (2004). [Statistics Explained](#). 2nd Edition. Routledge.
- Edmondson, A. C., & McManus, S. E. (2007). [Methodological Fit in Management Field Research](#). *The Academy of Management Review*, 32 (4), 1155–1179.
- ★ Corbin, J., & Strauss, A. (2008). [Basics of qualitative research](#). 3rd Edition. Sage.
- ★ Kittur, A. & Kraut, R. E. (2008). [Harnessing the wisdom of crowds in wikipedia: quality through coordination](#). In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*, 37–46.
- Lazar, J., Feng, J. H., & Hochheiser, H. (2010). [Research Methods in Human-Computer Interaction](#). Wiley.

### *Usability Evaluation Methods*

- Nielsen, J. (1993) [Usability Engineering \(Chapter 5\)](#). Morgan Kaufmann, pp. 115–163.
- Nielsen, J. (1993). [Usability Engineering \(Part of Chapter 6\)](#). San Francisco: Morgan Kaufmann, pp. 195–206.
- Barnum, C. M. (2011). [Usability Testing Essentials: Ready, Set...Test! \(Chapters 1-2\)](#). Burlington, MA: Morgan Kaufmann.

### *Studying Users*

- Holtzblatt, K. & Beyer, H. (1993) [Making customer-centered design work for teams](#). *Communications of the ACM*, 36 (10), 93–103.
- Blomberg, J., Giacomi, J., Mosher, A., & Swenton-Wall, P. (1993) [Ethnographic field methods and their relation to design](#). In D. Schuler and A. Namioka (eds.), *Participatory Design: Principles and Practices*. Hillsdale, NJ: Lawrence Erlbaum, pp. 123-155.
- Gaver, B., Dunne, T., and Pacenti, E. (1999). [Design: Cultural probes](#). *Interactions* 6 (1), 21–29.
- ★ Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). [A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method](#). *Science*, 306 (5702), 1776–1780.

### *Modeling Users*

- Card, S. K., Moran, T. P., & Newell, A. (1980). [The keystroke-level model for user performance time with interactive systems](#). *Communications of the ACM*, 23 (7), 396–410.
- Olson, J. R. & Olson, G. M. (1990). [The growth of cognitive modeling in human-computer interaction since GOMS](#). *Human-Computer Interaction*, 5 (2), 221–265.
- Cooper, A., Reimann, R., & Cronin, D. (2007). [About Face 3 \(Chapters 5-6\)](#). Wiley, pp. 75–123.

### *Interaction Design*

- Gaver, W. W. (1991) [Technology affordances](#). In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI '91)*, pp. 79–84.
- Norman, D. A. (1999) [Affordance, conventions, and design](#). *Interactions* 6 (3), 38–43.
- Cooper, A., Reimann, R., & Cronin, D. (2007) [About Face 3 \(Chapters 13-14\)](#). Wiley, pp. 269–320.

### *Prototyping*

- ★ Lichter, H., Schneider-Hufschmidt, M., & Zullighoven, H. (1994). [Prototyping in industrial software projects-bridging the gap between theory and practice](#). *IEEE Transactions on Software Engineering*, 20 (11), 825–832 .
- Rettig, M. (1994) [Prototyping for tiny fingers](#). *Communications of the ACM*, 37 (4), 21–27.
- Unger, R. & Chandler, C. (2009) [A Project Guide to UX Design: For User Experience Designers in the Field or in the Making \(Chapter 12\)](#). New Riders.