

# CS 3790, Summer 2015

## HW4: Distributed Cognition

**Due:** Thursday, July 2, 12:00pm (noon)  
**Deliverables:** PDF of observational data (typed or scanned) + PDF of written submission  
**Length:** ~800 words (1200 words max)  
**Grading:** Submissions will be graded according to completeness, depth, and writing style.

### Part 1: Observational Study

First read this introduction to ethnographic research:

<http://brianhoey.com/research/ethnography/>

You will conduct a (very brief) ethnographic study to explore how a specific instance of human-computer interaction (HCI) can be viewed as a distributed cognitive system.

1. Find a participant. You will need 15 minutes of their time. For 10 minutes, they will complete a task on a computer while you watch. Then, you will interview them for 5 minutes. *As before, please do not collect any personal information about the participant: no names, birthdays, or audio/video recordings.*
2. The task is given in the box below. You can present your participant with this task either in written or spoken form. While the participant completes this task, take notes on what you observe. How do they interact with the computer? In what order do things happen? Where are the representations? Do they make mistakes and backtrack? Etc.
3. After the 10 minutes are over (regardless of whether the participant has completed the task), ask them to stop working. (The task is designed so that it is unlikely to be fully completed in 10 minutes - you can tell your participant this fact beforehand, if you want. If you and your participant want to go for longer than 10 minutes, feel free.) Then, conduct a 5 minute interview with them in which you ask them open-ended questions about the task that they just completed, and how they approached it. You can come up with a list of questions beforehand, or you can ask questions in a more ad hoc fashion.

**Task: “You are planning a 5 day vacation getaway as a surprise for your spouse, in celebration of your fifth wedding anniversary. The dates for your trip are July 23 - July 27, 2015. You want to go somewhere nice, but still keep the costs reasonable. And, your spouse LOVES lighthouses. Please plan this trip. You’ll want to think about transportation, lodging, nice places to eat, and fun activities to do.”**

The first deliverable is a copy of your raw notes from this 15 minute data collection session. Please submit your notes in PDF form. If you wrote your notes by hand, please scan them and submit as PDF. (We won't be grading these notes on legibility or organization - your note-taking system can be whatever you wish. We will be looking for evidence of relevant information gathering; you will be using these notes to complete part 2 of this assignment.)

## **Part 2: Analysis of Distributed Cognition**

Write an analysis of what you observed using a distributed cognition framework. (You can think of your writeup as a “mini” version of the Hutchins paper.) Your analysis should take the form of three individual paragraphs:

1. **Behavioral/procedural description:** Describe the distributed cognitive system at its behavioral level. Suggested topics: What are the inputs and outputs of the system? What function does the system achieve, and what externally observable behaviors does it exhibit?

*Example: In the Hutchins paper, this takes place on pages 271-275.*

2. **Description of representations/processes outside of the participant:** Describe, using concrete examples, several of the representations that are contained within this distributed cognitive system that are outside the mind of the participant. Suggested topics: In what medium does each representation occur? Is each representation ephemeral or persistent? Is each representation robust or susceptible to interference? Is there redundancy in how a particular piece of information is represented? How are these representations processed to achieve the behaviors you described in paragraph 1? Please justify your answers.

*Example: In the Hutchins paper, this takes place on pages 275-279.*

3. **Description of representations/processes inside of the participant:** Describe, using concrete examples, how the external representations/processes in paragraph 2 interact with the internal mental representations/processes of the participant. Suggested topics: Without this particular external representation, how would the cognitive requirements of the task be different? Were these representations designed to be used in the way they are used, or is the participant making opportunistic use of existing structures in the environment? Please justify your answers.

*Example: In the Hutchins paper, this takes place on pages 279-285.*

**The second deliverable is this written analysis.** Please submit your responses in PDF form.