

COMP SCI 4HC3 - Human-Computer Interaction

RESEARCH Project Milestone #1 - Proposal and Literature Review

Due Date: October 31, 2014, noon

Late submissions: Accepted up to 5 days late at a penalty of 20% per day. *Note that you will *still* have to do this work even if you don't submit this milestone, as it will be required in your final report!!! Recall that the purpose of the milestones is to help pace your work, and to provide you feedback to help improve your final report!*

Grading: This milestone is worth 25% of your project grade

Group Work: This, and all project milestones, are group work. Groups consist of 3 or 4 students. Pick your team carefully, as you will work with these team-mates for the rest of the project. You will include the names of all group members with your submission (see below for details). All group members get the same grade.

Part 1 – Project Proposal:

For this first milestone, you will formally propose your project. This will set the stage for the rest of your project and will obviously influence how your project develops. Consequently, you should choose your project topic carefully. You can change it later if necessary, but you will need to provide a new proposal and literature review to do so.

You will identify a topic relating to human-computer interaction that warrants an experimental evaluation. Many such topics have been discussed so far in the course. Some possible topics include:

- effects of CD gain on pointing performance with the mouse, joysticks, game controllers, or tilt control
- effects of latency on text entry, mouse pointing, touchscreen controls, game playing, or tilt control
- layout of widgets in a toolbars/desktops - e.g., visual search time vs. selection time
- size and/or placement of menu items - visual search time vs. selection time, e.g., random placement of menu items vs. different sized menu items
- general human performance comparison of pointing devices, e.g., mouse, remote pointer (Wiimote), touchscreen, tilt, joysticks, LeapMotion, Razer Hydra, etc.
- text entry, e.g., soft keyboards, physical keyboards, mapping reduced keysets to full text entry, using remote pointers (e.g., Wiimote) for texting, comparing word prediction algorithms, etc.
- impacts of distraction on performance in typing, pointing, driving, gaming, etc.
- voice control, e.g., non-verbal vocal interaction, comparing text entry on soft keyboards to voice recognition, verbal pointer control, etc.
- comparing physical buttons/game pads to touchscreen or tilt control for game playing
- comparing different UI widgets for common tasks, e.g., drop-down menus vs. buttons vs. toolbars
- comparing different presentation options for GUI widgets, e.g., icon buttons vs. text buttons

These are but a few of the myriad of possible topics. You are certainly welcome (and encouraged!) to identify a topic on your own. In all cases, the project will involve an experimental comparison of two or more conditions. These will, in part, be informed by your literature review (see below) - but you may already have an idea in mind from your day-to-day use of interactive systems. For example, "I'm pretty sure a mouse/keyboard is better for shooting games than a game controller/joystick", or "I've downloaded a new soft keyboard for my smartphone, and I'm wondering if I can type faster with it than the default keyboard" – these kinds of hypotheses are often what drives forward research in HCI. The first of these would qualify as a pointing/selection task, and the second falls under text entry. The conditions in both of these examples are easily compared, and would make great project options.

The proposal should include:

- a) an overview of the topic/interaction technique/device of interest – tell me why you want to study this particular interface
- b) an idea of what kind of conditions you would compare and why these conditions are of interest (likely informed by your literature review)

- c) hypotheses about what you expect the outcome will be, and why. The "why" part will, again, be informed by your literature review (i.e., "Based on previous findings in similar studies, I expect that Condition A will afford better performance than Condition B").

The proposal should be approximately 300 – 600 words (and no more than 1000 please!). It should be written in a style that will lend itself to be re-purposed in your eventual final report - it will effectively serve as the introduction to your final report paper. To this end, it should be written in a formal style, and similar to the introduction sections in the papers you read for your literature review.

Part 2 – Literature Review:

This part will likely happen in tandem with the proposal. You will likely make revisions to your proposal based on what you read on the topic during your literature search. The literature review should include *at minimum* 8 academic papers on your topic. It should include a brief summary of each paper, details of the methodology employed by the authors, and their main findings as it pertains to your topic. More importantly, it should also include some level of meta-analysis/comparison/contrast of the literature. For example, if results of similar previous experiments contradict one another, point this out! Better yet, if you have an idea as to why they contradict each other, mention this too! If you can think of a novel twist, or ways of improving how previous work was conducted, by all means, discuss this in here.

The literature review will also be repurposed in your final report (it will form the "related work" section of the report, which you will find will appear in virtually all papers you review for this). Some guidelines:

- academic sources take priority over non-academic ones. The papers reviewed should be from a source such as the ACM Digital Library, or the IEEE Xplore library - i.e., they should be published in an academic conference or journal
- you can cite websites (e.g., Wikipedia) as appropriate, but these non-academic sources will not "count" toward the limit. Often, these will include a reference list of their academic sources - these are worth following up!
- Citations must be used for both *direct quotes* (which will likely be minimal) and in reference to *ideas presented by other authors* in the articles you've picked
- Your reference list should conform to the ACM reference style (i.e., numeric references in square brackets embedded in your text, followed by a numbered list of references)

The lit review should be between 500 - 1000 words. Note that if your review is not thorough enough, you will be encouraged to improve it for the final report.

Submission:

Both parts should be included in a single document using the ACM CHI submission format (available at http://www.sigchi.org/publications/chipubform/sigchi-papers-word-template/at_download/file and from Avenue). This should also include a title (note that this may change prior to your final report) and a list of "authors" (i.e., your group members – you can leave off “affiliation” information and keywords though). You will add to this document going forward in the course – so make sure you keep multiple backups!

Submit your document - both original Word format and a PDF - to the Avenue link by the date specified. Only one group member should submit this (but again, make sure all group members names appear in the document!). Be sure to also indicate if you are submitting a DESIGN or RESEARCH project in the “Abstract” section of your submission.