

CMSI 370

INTERACTION DESIGN

Fall 2010

Assignment IIII

As mentioned previously in class, this assignment comes to you courtesy of Dr. Dorin, and is similar in spirit to the two research papers that were given out during the October 28 class.

Not for Submission

By November 2

1. Read Chapter 6 from Shneiderman/Plaisant (Chapter 7 in older editions).
2. Read the menu research papers that were given out in class.
3. Shore up the material from the last few weeks with the readings from Dr. Toal and my textbook draft.
4. Fork off your own copy of the keyboard simulation code on GitHub.

By November 4

5. Finish the keyboard simulation implementation, as described in the instructions.
6. Bring any burning issues or questions to class, for resolution before we enter the testing phase of the assignment.

Weekend of November 6–7

7. All issues with the simulation should be resolved, so that you can spend the week of November 8 to the deadline performing your tests and writing up your reports.

For Submission

The test fixture for this experiment can be found in the *ipad-keyboard* folder within the *ixd-bazaar* repository (<http://github.com/dondi/ixd-bazaar>).

Touch Keyboard Size Experiment

Use *ixd-bazaar* to conduct an efficiency and error rate experiment between two touch keyboard styles: standard keyboard with identically-sized letter keys, and experimental keyboard with varying letter key sizes based on the frequency with which that letter appears in the English language.

Perform a series of typing tests using *ipad-keyboard*, gather the resulting data, and draw a conclusion

about the relative efficiency and error rates of the two types of keyboards.

Work on this as a group, and involve as many people as are willing to participate. Record the data and your analysis as a LaTeX report. Raw data may be stored as a plain text file.

Standing Implementation Issues

To reinforce what you have learned so far in terms of event-driven programming in web pages, we will put in some implementation work before going off into the tests. To give you a taste of collaborative development, we will divide this work up so that everyone has a specific area of responsibility.

The keyboard simulation at this writing requires the following functions:

- The experimental CSS alternative that resizes/repositions the keys based on letter frequency: http://en.wikipedia.org/wiki/Letter_frequency will suffice as a data source, and specific sizing/positioning, should be done in consultation with Dr. Dorin. The goal is to require only a change in CSS to deliver the keyboard variant; it is very possible that the current HTML will have to be tweaked to support both versions.

Behavior should then be built into the web page so that the user can switch seamlessly between the two stylesheets (skinning!).

- The actual test harness for the experiment: this involves having the subject type some sample text using each keyboard (current choice is, appropriately, an excerpt from Sir Arthur Conan Doyle's "The Adventure of the Dancing Men") then measuring their performance. For maximum data collection efficiency, code should be available that:

- ▶ Starts a timer when the user starts typing
- ▶ Provides some feedback that guides the user in terms of where they are (or should be) in the sample text

- ▶ Records what the user has typed
- ▶ Allows the user to signal when typing is finished (thus stopping the timer)
- ▶ Calculates an error metric between the sample and typed text
- ▶ Provides the typing time and error metric in a form that facilitates easy data collection (e.g., copy-pastable text, etc.)

How to Turn it In

Send the patches from your implementation work to me by November 5; I will review them over the weekend and push a final version.

Send your final report consisting of the LaTeX source and any other supplementary files by November 11.