A study in (HCI) human computer interaction

Aims: To compare various user interfaces and evaluate their design in terms of human usability

Background: User interfaces are becoming increasingly more important as the world conducts a web- based conversation with itself, along with the continuing computerization of products and facilities. When interfaces are situated in safety-critical contexts, their design and usability can be a matter of life and death: consider the fatalities associated with the Therac-25 radiation therapy machine. The USA Gore-Bush presidential campaign in 2000 was significantly disrupted by voter confusion over the computerized butterfly ballot design. Other classic interface issues include users mistaking their CD-ROM tray for a cupholder, or looking for the "any key". In terms of e-commerce, companies invest in the design of customer web-sites with consideration to visual appeal and usability. Current directions for interface applications include mobile, wearable and ubiquitous computing.

HCI issues include: colour theory; human perception; haptic/tactile technology; gender / age /cultural / special needs issues; speech recognition / generation; graphic design; cognitive issues such as memory, learning and problem solving; design of fonts; navigation; feedback to the user; usability; aesthetics; ethical issues; and interface problems.

For this project the student will design and implement at least 3 different software interfaces (just focussing on the interface) - for instance a web-page/site, a data-base, an interactive sketch tool, a distance learning facility, or a GUI. A more challenging goal is to implement a mobile interface such as for the Android operating system for touchscreen devices.

The report will comprise a comprehensive survey on HCI discussing both software and hardware interfaces. In particular, the software interfaces implemented by the student will be evaluated in the report in terms of HCI principles.

This project is not based on any of your courses, therefore some HCI material will be provided.

Early Deliverables

1. A text-based (non-interactive) monochrome web-page
2. A colourful web-site including images and navigation
3. GUI built with buttons etc.
4. Report: about 15 pages including sketches of designs.

Final Deliverables

1. Design and implement a more advanced interface(s)
2. Complete report
3. The programs must have an object-oriented design, using modern software engineering principles.
4. The report will describe the software engineering processes involved in generating your software.
5. The report will include comparisons of interfaces with a discussion of their meanings.
6. The report will include a User Manual.

Prerequisites: Interaction Design module (PC3001)

Reading

- http://hci.rwth-aachen.de/HCIBooks
- http://www.netmagazine.com/features/top-50-books-web-designers-and-developers