

HUMAN COMPUTER INTERACTION

IT4140/CS4134

WEEK 1

Lecturer

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WEEK 1: USABILITY OF INTERACTIVE SYSTEMS

- INTRODUCTION
- USABILITY GOALS AND MEASURES
- USABILITY MOTIVATIONS
- GOALS FOR OUR PROFESSION

1. INTRODUCTION

- User Interface design has given users the ability to access content which was originally meant for computers on mobile devices.
- Previous tools which were only used on computers have evolved to simple, easy to use tools which are available globally.
- *Human-Computer Interaction* came about from the combination of experimental psychology and powerful tools of computer science.
- Useful insight was picked from educational and industrial psychologists, instructional and graphic designers, technical writers, experts in human factors or ergonomics, and growing teams of anthropologists and sociologists.

- For individuals benefits of user interfaces include:
 1. Improved learning by children
 2. The ability of users with disabilities to have more productive lives and graphic artists can explore more creative possibilities.

With all these advancements there are surely some cons to individuals:

1. Reduction in the need to telephone operators
2. Low demand for typesetters etc

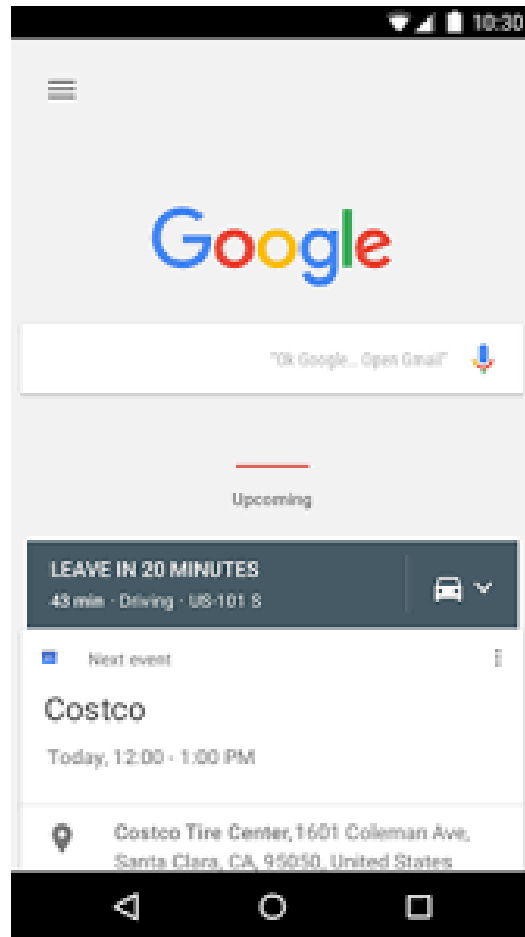


FIGURE 1.1 Google Now for reviewing notifications and issuing commands
Facebook for interaction with friends, businesses etc

- Advancements have made it possible to have interfaces that are wearable and those which are worn under-the-skin eg pacemakers, insulin pumps etc.
- Sensors are also being used to track packages, enable users to access building, tollbooths etc and there is the push towards having sensors to track epidemics and pollution among others.
- There is the push for people to churn out more designs and interfaces which solve that will solve the needs of humans in their day to day activities.
- It is important for designers of such interfaces to seek the views of persons who adopt to such interfaces easily as well as those who are resistant to new ways of doing things.

2. USABILITY GOALS AND MEASURES

- Recognition of an good interface will be derived if the following elements are identified:
 - usability
 - universality
 - usefulness
- The 3 elements above which will make a good and reliable interface can be achieved by following these principles.
 - thoughtful planning
 - sensitivity to user needs
 - devotion to requirements analysis
 - diligent testing
 - keep within budget and on schedule.

- To come up with a good user-interface one must do the following
 - select experienced designers
 - prepare realistic schedules that include time for requirements gathering, guidelines preparation, and repeated testing.
- Every interface design needs to start with the following information:
 - determining user needs
 - generating multiple design alternatives
 - conducting extensive evaluations
- Having a deep understanding of the different people who will use the interface and the various tasks they need to undertake is required.

- A good interface is said to be one which satisfies the following requirements:
 - positive feelings of success by the users
 - competence of use
 - mastery among users
- When users have a clear mental picture of the interface it becomes easy for them to use it and also predict the responses to their actions whiles using the interface.

- There will be a scrutiny of the multiple designs which have been developed. The best options will be considered by the designers and users.
- Mockups serve as a means of visualizing the design and gives users and the designer a realistic view of the intended outcomes. For experts it is more effective to get interactive prototypes to serve this purpose.
- The user training and supporting materials such as online help can be produced before the implementation to provide another review and a new perspective on the design

3. USABILITY MOTIVATIONS

- A well designed user interface is able to create a lot of interest in its usability.
- There is a lot of interest from designers and managers of consumer electronics such as mobile devices, e-commerce websites, and social media where excellent user experiences are necessary to succeed in large, highly competitive markets .
- Strong motivations and demand for usability quality comes from individuals who perform functions that need quick and reliable outcomes, excellence in performing tasks eg life critical systems, industrial plants, legal offices, and police agencies.

4. GOALS FOR OUR PROFESSION

- It is important to have clear goals for the design of user interfaces not only for individuals but also for educational and professional enterprises that use the interfaces.
- The various goals of user interfaces are:
 - (1) influencing academic and business researchers
 - (2) providing tools, techniques, and knowledge for commercial designers
 - (3) raising the user-interface consciousness of the general public.

(1) Influencing Academic and Business Researchers

- User interfaces have made it easier to get feedback from users in order to perform academic or business research as they are able to communicate with their devices and provide the needed information
- In order to undertake an effective interface research with a controlled experiment the following will be considered:
 - Full grasp of the problem to be solved and theories which can be
 - An easy to understand explanation of the testable hypothesis

- Using a small number of variables to test the hypothesis
- Evaluate the variables which will influence the outcome of the research
- Careful selection and assignment of subjects
- Control for bias in subjects, procedures, and materials
- Application of statistical tests
- Interpretation of results, refinement of theory, and guidance for experimenters

(2) Providing tools, techniques, and knowledge for commercial designers

- The various tools used in User-interface creation are directed at ensuring the production of prototypes etc while maintaining the consistency consistency, supporting universal usability, and simplifying evolutionary refinement.
- After the interface has been set up there needs to be continuous refinements or improvements which can be done via observations, surveys, interviews, usage log analysis, or more controlled empirical tests of novel strategies
- Tools such as e-mail, web-based tools, and text messaging among enable users to send their views and suggestions directly to the designers.

(3) Raising the User-Interface consciousness of the general public

- User interfaces are widely used in most of our activities in recent times that it does not seem important to convince people to use them.
- User apprehension to user interfaces stems from the poor design of some interfaces, complex features, inconsistent terminology, confusing error messages, and tortuous sequences of actions
- One goal of HCI is to help the users translate their fear of using the interfaces into actions such as:
 - Expressing their anger at the designer when they get ERROR MESSAGES while using the interface

- Users should complain to the designer in the case where a convenient means of remembering complex actions was not provided.
- Influence government allocation of resources to using more friendly user interfaces in the areas of healthcare and learning to facilitate growth and promote quality services.

QUESTIONS

1. Devise an outline, consistent with the scientific method, which interface researchers should follow to validate their designs.
2. List some characteristics of successful user-interface designers with respect to their approach to solving UI problems.

3. Some skeptics feel that accommodating diversity requires dumbing-down or lowest-common-denominator strategies. However, others are of the opinion that rethinking interface designs to accommodate these diversity situations will result in a better product for all users. Give an example of a product that meets the specific needs of a certain group of people, yet gives all users a better experience.

4. How can designers encourage novice users to use a system?

5. Suggest three usability measures that can be directly used to produce a practical evaluation of a system. Keep the goals of efficiency and satisfaction in mind with these measures.