

# Human~Computer Interaction

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## Lecture 5

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# Headlines

- Introduction
- What are affective aspects?
- Expressive Interface
- User Frustration
- Examples of classic user-frustration provokers



# 5.1 Introduction

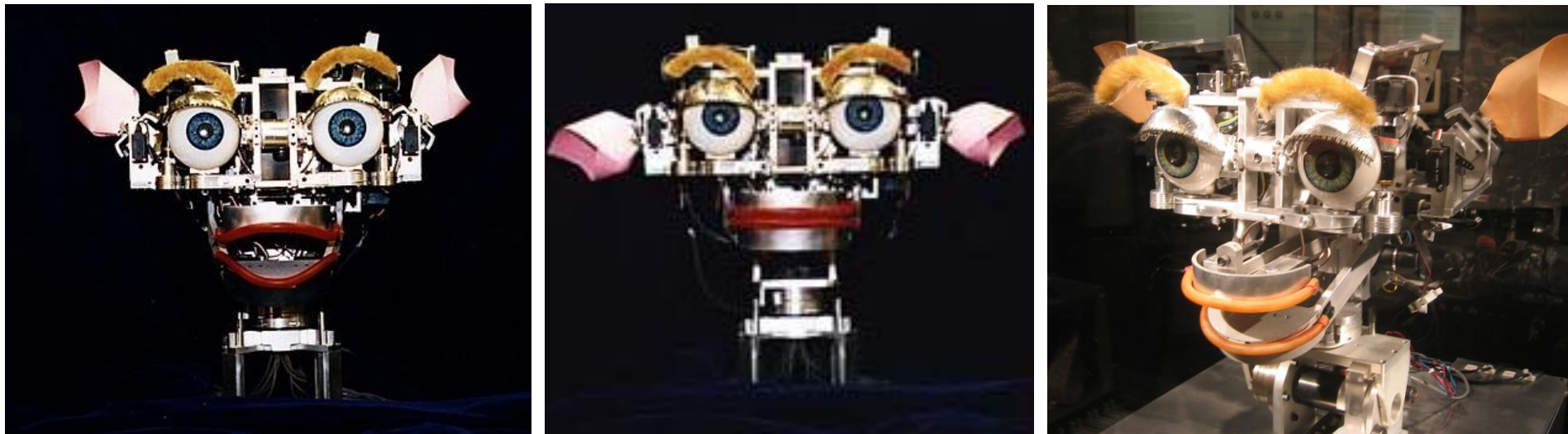
An overarching goal of interaction design is to develop interactive systems that elicit positive responses from users, such as feeling at ease, being comfortable, and enjoying the experience of using them. More recently, designers have become interested in how to design interactive products that elicit specific kinds of emotional responses in users, motivating them to learn, play, be creative, and be social. There is also a growing concern with how to design that people can trust, that make them feel comfortable about divulging personal information or making a purchase.

## 5.2 What are affective aspects?

In general, the term affective refers to producing an emotional response. For example, when people are happy they smile. Affective behavior can also cause an emotional response in others. So, for example, when someone smiles it can cause others to feel good and smile back. Emotional skills, especially the ability to express and recognize emotions, are central to human communication. Most of are highly skilled at detecting when someone is angry, happy, sad, or bored by recognizing their facial expressions, way of speaking, and other body signals.

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It has been suggested that computers be designed to recognize and express emotions in the same way humans do (1998). The term coined for this approach is affective computing. A long-standing area of research in AI and artificial life has been to create intelligent robots and other computer based systems that behave like humans and other creatures.



5.1 Kismet the robot expressing surprise, anger, and happiness.

## 5.3 Expressive Interface

A well known approach to designing affective interfaces is to use expressive icons and other graphical elements to convey emotional states. These are typically used to indicate the current state of a computer. For a hallmark of the Apple computer is the icon of a smiling Mac that appears on the screen when the machine is first started (see Figure 5.2 (a)). The smiling icon conveys a sense of friendliness, inviting the user to feel at ease and even smile back.



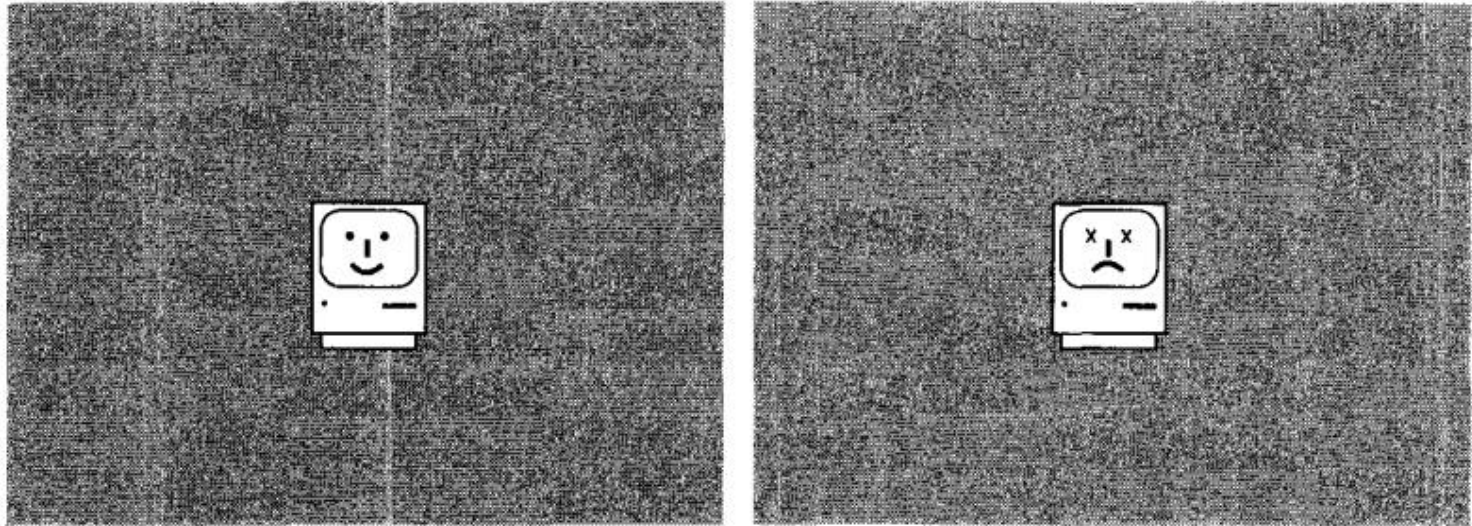


Figure 5.2 (a) **Smiling** and (b) sad **Apple** Macs.



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The appearance of the icon on the screen can also be very reassuring to users, indicating that their computer is working fine. This is especially useful when they have just rebooted the computer after it has crashed and where previous attempts to reboot have failed (usually indicated by a sad icon face see Figure 5.2 (b), Other ways of conveying the status of a system are through the use of:



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- dynamic icons, a recycle bin expanding when a file is placed into it
- animations, a bee flying across the screen indicating that the computer is doing something, like checking files
- spoken messages, using various kinds of voices, telling the user what needs to be done
- various sounds indicating actions and events window closing, files being dragged, new email arriving)

One of the benefits of these kinds of expressive embellishments is that they provide reassuring feedback to the user that can be both informative and fun.

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The style of an interface, in terms of the shapes, fonts, colors, and graphical elements that are used and the way they are combined, influences how pleasurable it is to interact with. The more effective the use of imagery at the interface, the more engaging and enjoyable it can be (Mullet and Sano, 1995).

interaction design should not just be about usability per se, but should also include aesthetic design, such as how pleasurable an interface is look at (or listen to). The key is to get the right balance between usability and other design concerns, like aesthetics

(See Figure 5.3 on Color Plate 6)





Figure 5.3 Examples of aesthetically pleasing interactive products: iMac, Nokia cell phone and IDEO's digital radio for the BBC.



## 5.4 User Frustration

Everyone at some time or other gets frustrated when using a computer. The effect ranges from feeling mildly amused to extremely angry. There are myriads of reasons why such emotional responses occur:

- when an application doesn't work properly or crashes
- when a system doesn't do what the user wants it to do
- when a user's expectations are not met

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- when a system does not provide sufficient information to let the user know what to do
- when error messages pop up that are vague, obtuse, or condemning
- when the appearance of an interface is too noisy, garish, gimmicky, or patronizing
- when a system requires users to carry out many steps to perform a task, only to discover a mistake was made somewhere along the line and they need to start all over again

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examples of classic user-frustration provokers that could be avoided or reduced by putting more thought into the design of the conceptual model.



# 1~Gimmicks

Cause: When a users' expectations are not met and they are instead presented with a gimmicky display.

Level of frustration: Mild

This can happen when clicking on a link to a only to discover that it is still under construction. It can be still more annoying when the displays a road-sign icon of men at work (see Figure 6.5).

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By far the best strategy is to avoid using gimmicks to cover up the real crime. In this example it is better to put material live on the web only when it is complete and working properly.



**Figure 5.6** Men at work icon sign indicating “website under construction.” According to **AltaVista**, there were over 12 million **websites** containing the phrase “under construction” in January 2001.

# 2~Error Messages

Cause: When a system or application crashes and provides an unexpected error message.

Level of frustration : High

Error messages have a long history computer interface design, and are notorious for their incomprehensibility. For example, (1993) an early system that was developed that allowed only for one line of error messages. Whenever the error message was too long, the system truncated it to fit on the line, which the users would spend ages trying to decipher.

Ideally, error messages should be treated as messages. Instead of explicating what has happened, they should state the cause of the problem and what the user needs to do to fix it. Shneiderman (1998) has developed a detailed set of guidelines on how to develop helpful messages that are easy to read and understand. Box 5.1 summarizes the main recommendations

## **BOX 5.1** Main Guidelines on How to Design Good Error Messages (*Adapted from Shneiderman, 1998*)

- Rather than condemn users, messages should be courteous, indicating what users need to do to set things right.
- Avoid using terms like FATAL, ERROR, INVALID, BAD, and ILLEGAL.
- Avoid long code numbers and uppercase letters.
- Audio warnings should be under the user's control, since they can cause much embarrassment.
- Messages should be precise rather than vague.
- Messages should provide a help icon or command to allow users to get context-sensitive help.
- Messages should be provided at multiple levels, so that short messages can be supplemented with longer explanations.



Below are some common error messages expressed in harsh computer jargon that can be quite threatening and offensive

**SYNTAX ERROR**—There is a problem with the way you have typed the command. Check for typos.

**INVALID FILENAME**—Choose another file name that uses only 20 characters or less and is lower case without any spaces.

**INVALID DATA**—There is a problem with the data you have entered. Try again, checking that no decimal points are used.

**APPLICATION ZETA HAS UNEXPECTEDLY QUIT DUE TO A TYPE 4 ERROR**—The application you were working on crashed because of an internal memory problem. Try rebooting and increasing the amount of allocated memory to the application.

**DRIVE ERROR: ABORT, RETRY OR FAIL?**—There is a problem with reading your disk. Try inserting it again.



# 3~Overburdening the user

Cause: Upgrading software so that users are required to carry out excessive housekeeping tasks

Level of frustration: Medium to high

Another pervasive frustrating user experience is upgrading a piece of software. It is now common for users to have to go through this housekeeping task on a regular basis, especially if they run a number of applications. More often than not it tends to be a real chore, being very time consuming and requiring the user to do a whole range of things, like resetting preferences, sorting out extensions, checking other configurations, and learning new ways of doing things.



# How to avoid or help reduce the frustration:

Users should not have to spend large amounts of time on housekeeping tasks. Upgrading should be an effortless and largely automatic process. Designers need to think carefully about the trade offs incurred when introducing upgrades, especially the amount of relearning required. Plug-ins that users have to search for, download, and set up themselves should be phased out and replaced with more powerful browsers that automatically download the right plug-ins and place them in the appropriate desktop folder reliably, or, better still, interpret the different file types themselves.

# 4. Appearance

Cause: When the appearance of an interface is unpleasant

Level of frustration: Medium

The appearance of an interface can affect its usability. Users get annoyed by:

- Website that are overloaded with text and graphics, making it difficult to find the information desired and slow to access
- flashing animations, especially banner ads, which are very distracting

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- the copious use of sound effects and especially when selecting options, carrying out actions, starting up running tutorials, or watching demos
- featuritis an excessive number of operations, represented at the interface as banks of icons or cascading menus
- childish designs that keep popping up on the screen, such as certain kinds of helper agents



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- poorly laid out keyboards, pads, control panels, and other input devices that cause the user to press the wrong keys or buttons when trying to do something else

How to avoid or help reduce the frustration:

Interfaces should be designed to be simple, perceptually salient, and elegant and to adhere to usability design principles, well-thought-out graphic design principles, and ergonomic guidelines (Mullet and Sano, 1996).



# Thank You

