CZ2004 Human-Computer Interaction
Tutorial 5: Human-Computer Interfaces

1. The PDP-1 mainframe, introduced in 1960, was the first commercial computer with a video display as a standard peripheral. What was the standard display technology on other mainframes prior to that time? Discuss the changes in display capabilities that video displays would have brought, and suggest some new applications of the time that would have been enabled by these changes.

2. Various text entry interfaces include:

    a. Keyboards and keysets. How does text entry on a stenotype differ from a QWERTY keyboard? Which is faster, and why?

    b. Handwriting. Compare the Graffiti style handwriting recognition on Palm-based PDAs to handwriting recognition on Microsoft-based tablet PCs. When is one system better than the other?

    c. Speech. Explain the main differences between *continuous speech recognition* and *spoken command recognition*.

3.

    a. How does moving a mouse fast affect pointer speed as compared to moving a pointing stick (such as the IBM TrackPoint) fast?

    b. Compare the absolute pointing interfaces of stylus, touch and free arm pointing (i.e. aimed pointing).

    c. Consider an interface where a user points to a screen location by deliberately looking at it, which may be implemented by tracking the user's eye gaze direction. Discuss whether such an interface is good, from an HCI perspective.

4.

    a. Describe the display spatial characteristics of physical size, aspect ratio, spatial resolution and viewing angle. What factors does the display field of view depend on, and why?

b. What is brightness and black level? In what conditions are these intensity characteristics more important for improving the effective contrast?

c. For the different use scenarios of *mobility*, *office work*, *home entertainment* and *immersion*, suggest which display characteristics are most important.

5.

a. Discuss the different types of haptic technology, ranging from force feedback to 3D haptics.

b. Briefly describe *motion cueing techniques* in motion simulation.

c. What are the primary human senses utilized in haptics and motion simulation?