CHAPTER – 7

User Interface

User Interface:
- The user interface is the interactive input and output of computer and it is perceived and operated on by users.
- Multimedia user interfaces are computer interfaces that communicate with users using multiple media, sometimes using multiple modes such as written text together with spoken language.
- Graphical user Interfaces using the mouse as the input device-have greatly simplified human-machine interaction. A large number of graphical commands are hidden to the users through the use of a window system and xwindow system.

There are still some problems with current user interfaces:
- One problem is computer interaction which is still neither natural nor effective.
- Another problem is the specification of object movement (specification of movement of graphics or text is more difficult than using a video motion).

General Design Issues:
The main emphasis in the design of multimedia user interfaces is multimedia presentation. There are several issues which must be considered:
1. To determine the approximate information content to be communicated.
2. To represent the essential characteristics of the information.
3. To represent the communicative intent.
4. To choose the proper media for information presentation.
5. To coordinate different media and assembling techniques within a presentation.
6. To provide interactive exploration of the information presented.

(1) Architectural issues:
- An effective presentation design process should not only involve sequential flow of actions, but also parallel and interactive actions. This means that there is a requirement for extensive feedback going on between the components making decisions about media and modalities.

(2) Information characteristics for presentation:
A complete set of information characteristics makes knowledge definition and representation easier because it allows for approximate between information and presentation technique. The information characteristics specify:
(i) Types (ordering information)
(ii) Relational structures (dependency)
(iii) Multi-domain Relation (Multiple attributes / multiple object sets / multiple displays)
(iv) Large data sets (collection of heterogeneous objects)

(3) Presentation Function:

Presentation function is a program which displays an object. It is important to specify the presentation of function Independent from presentation form, style or the information it conveys.

(4) Presentation Design Knowledge:

To design a presentation, issues like content selection, media and presentation technique selection and presentation coordinate must be considered.

(5) Effective Human-computer Interaction:
- The most important issues in multimedia designing is effective human-computer interaction of the interface i.e. user friendliness.
- The main issues the user interface designer should keep in mind:
(1) Content
(2) Linkage
(3) Evaluation of the interfaces
(4) Interactive capabilities
(5) Separability of the user interaction from the application.

Extension through Video and Audio:

Continuous stream audio and video play a significant role in multimedia. The main issue during the presentation of continuous media streams is the continuity in time. Hence time is a new presentation dimension in a user interface.

Video of the User Interface:
- A continuous sequence of at least 15 individual images per second gives a rough perception of a continuous motion picture. At the user interface, video is implemented through a continuous sequence of individual images. Hence, video can be manipulated at this interface similar to manipulation of individual still images.

Hardware for visualization of Motion Pictures:

Special hardware for visualization of motion picture is available today, mostly through additional video cards. Similarly, IBM-M-Motion and Action media II (Intel / IBM) cards. The parallay, sun and Raster-op cards are also additional video cards. Today, these cards have become an integral part of the multimedia system.
- The video data may be transmitted from the camera into a computer network and then displayed.

Audio at the User Interface:

Audio can be implemented at the user interface for application control. Thus, speech analysis is necessary.
- Speech analysis is either speaker-dependent or speaker independent.
- Speaker dependent solutions allow the input of approximately 25000 different words with a relatively low error rate.
- A speaker independent system can recognize only a limited set of words.
- During audio output, the additional presentation dimension of space can be introduced using two or more separate channels to give a natural distribution of sound. The best known example of this technique is stereo.

User friendliness as the Primary Goal:

- User friendliness is the main property of a good user interface.
- The goal of user-friendliness is implementation of a user-friendly human-computer interface.
- The design of user-friendliness graphical interface requires the consideration of many conditions.

Some requirements for user-friendliness are as follows
(i) Easy to learn instructions:
- Application instruction must be easy to learn.
- A multimedia application must support similar mechanisms which know to the User form other applications.
(ii) Content-sensitive Help Functions:
- A content-sensitive help function using hypermedia technique is very helpful i.e. according to the state of application, different help texts are displayed.
(iii) Easy to Remember Instructions:
- A user-friendly interface must also have the property that the user easily remembers the application instruction rules.
- Easily remembered instructions might be supported by the intuitive association of what the user already known.

Effective instructions:
      The user interface should enable effective use of the application. This means:
- Logically connected functions should be presented together and similarly.
- Graphical symbols or short video clips are also more effective than textual input / output.
- Different media should be able to be exchanged among different applications.
- Action should be activated quickly.
- A configuration of user interface should be usable by both professionals and users.

Aesthetics:
      With respect to aesthetics, the color combination, character sets, resolution and form of the window need to be considered. They determine a user's first and lasting impressions.

6. Effective Implementation Support:
- To achieve effective implementation of a user-friendly human-computer graphical interface, the user's requirement must be considered. This influences the cost of the implementation.

7. Entry Elements:
      User interfaces use different ways to entries the user.
- Entries in a menu
- Entries on a graphical interface
- Entries through Combo box, Radio button.