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Introduction to Multimedia

Chapter · October 2018

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What is Multimedia?

Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics/drawings, images).



General Definition

A good general working definition for this module is:

- **Multimedia** is the field concerned with the **computer controlled** integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed **digitally**.

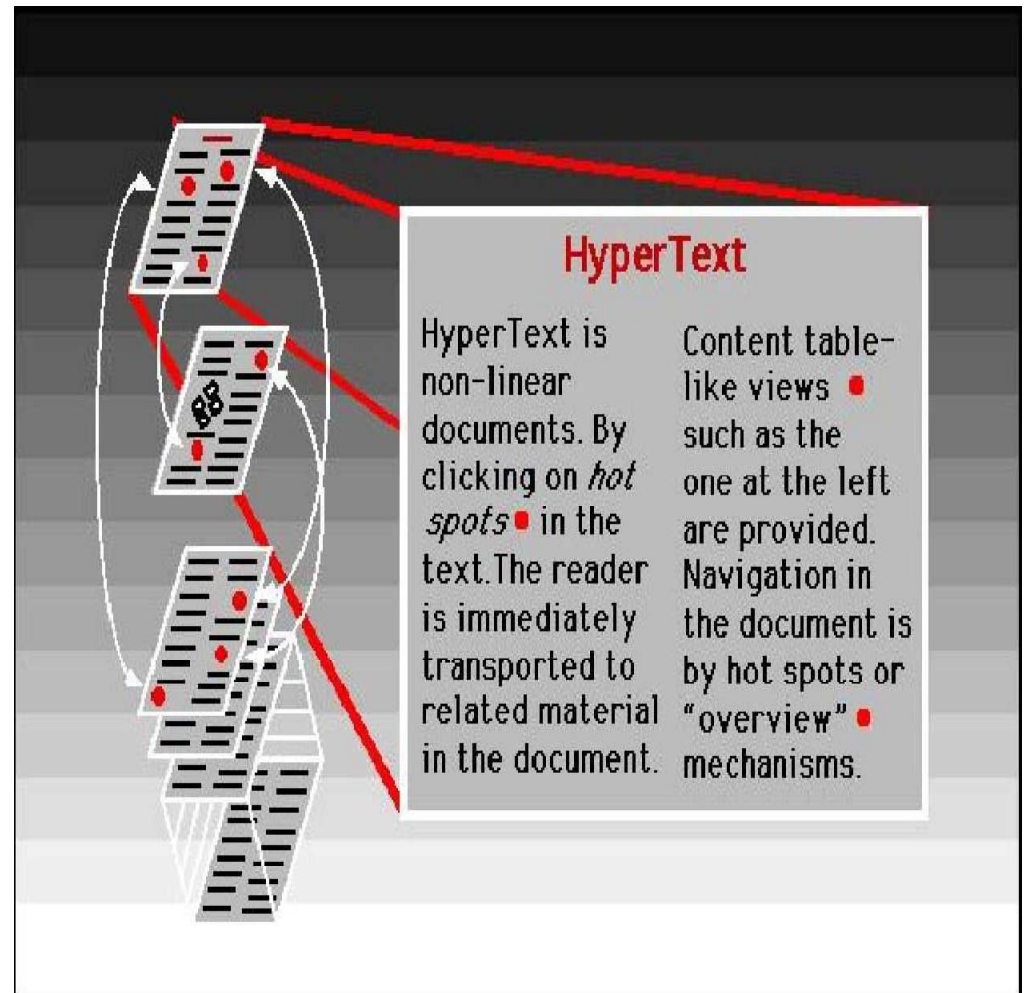


Multimedia Application Definition

- **A Multimedia Application** is an application which uses a collection of multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video

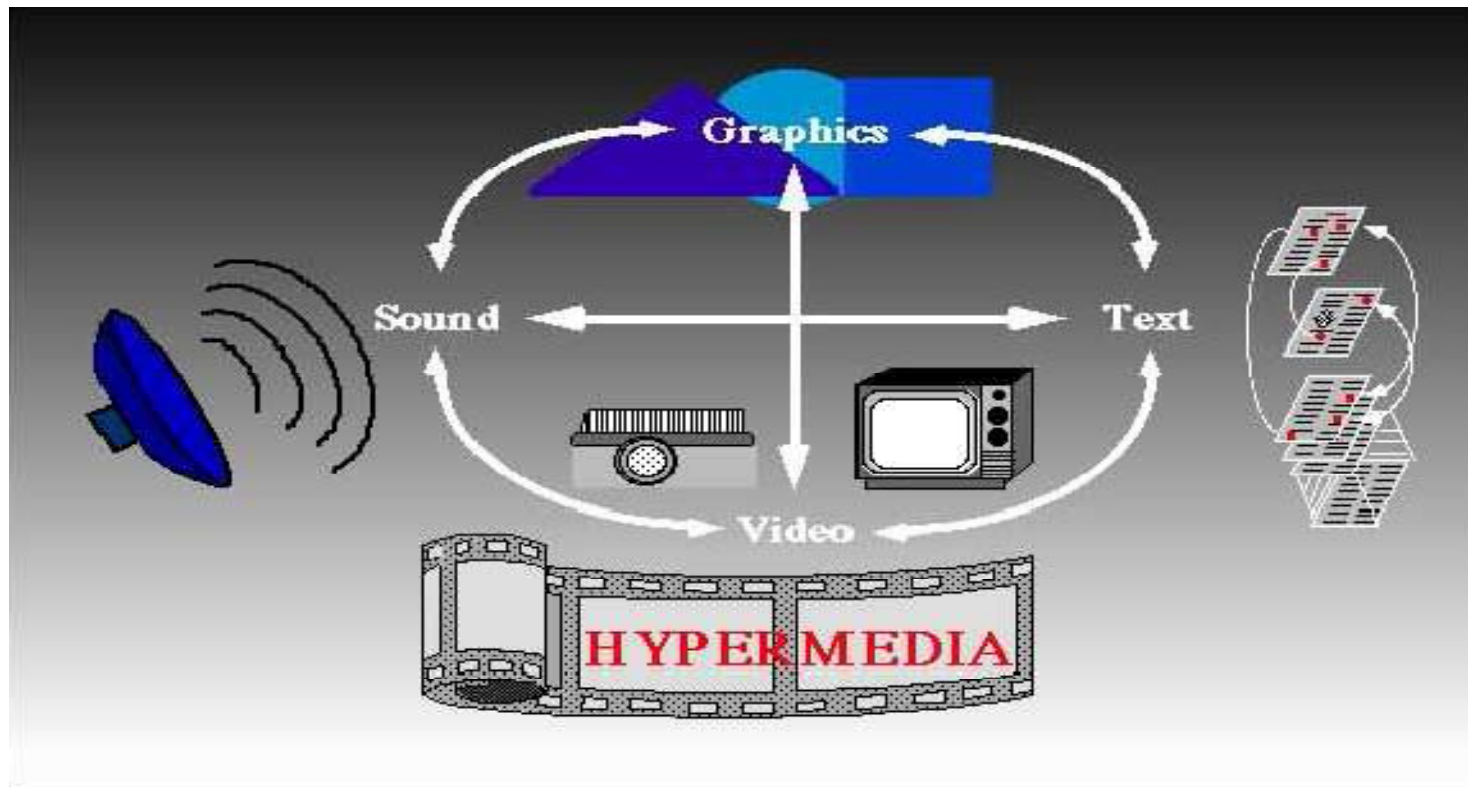
What is HyperText and HyperMedia?

- Hypertext is a text which contains links to other texts.
- The term was invented by Ted Nelson around 1965.



Hypermedia

- HyperMedia is not constrained to be text-based. It can include other media, e.g., graphics, images, and especially the continuous media – sound and video.





Example Hypermedia Applications?

- The World Wide Web (WWW) is the best example of a hypermedia application.
- Powerpoint
- Adobe Acrobat



Multimedia Systems

- A **Multimedia System** is a system capable of processing multimedia data and applications
- A **Multimedia System** is characterised by the processing, storage, generation, manipulation of Multimedia information.



Characteristics of a Multimedia System

A Multimedia system has four basic characteristics:

- Multimedia systems must be **computer controlled**.
- Multimedia systems are **integrated**.
- The information they handle must be represented **digitally**.
- The interface to the final presentation of media is usually **interactive**.



Challenges for Multimedia Systems

- Distributed Networks
- Temporal relationship between data
 - Render different data at same time - continuously.
 - Sequencing within the media
 - playing frames in correct order/time**
 - frame in video**
 - **Synchronisation** — inter-media scheduling



Key Issues for Multimedia Systems

The key issues multimedia systems need to deal with here are:

- How to represent and store temporal information.
- How to strictly maintain the temporal relationships on play back/retrieval
- What process are involved in the above.
- Data has to be represented **digitally** — Analog—Digital Conversion, Sampling etc.
- Large Data Requirements — bandwidth, storage, compression



Components of a Multimedia System

Now let us consider the Components (Hardware and Software) required for a multimedia system:

- **Capture devices** — Video Camera, Video Recorder, Audio Microphone, Keyboards, mice, graphics tablets, 3D input devices, tactile sensors, VR devices. Digitising Hardware
- **Storage Devices** — Hard disks, CD-ROMs, DVD-ROM, etc
- **Communication Networks** — Local Networks, Intranets, Internet, Multimedia or other special high speed networks.
- **Computer Systems** — Multimedia Desktop machines, Workstations, MPEG/VIDEO/DSP Hardware
- **Display Devices** — CD-quality speakers, HDTV, SVGA, Hi-Resolution monitors, Colour printers etc.



Applications

Examples of Multimedia Applications include:

- World Wide Web
- Hypermedia courseware
- Video conferencing
- Video-on-demand
- Interactive TV
- Groupware
- Home shopping
- Games
- Virtual reality
- Digital video editing and production systems



Practical


Lab 1 and 2

Adobe Photoshop

- Welcome to Adobe Photoshop, the professional image-editing standard for photographers, professional designers, and graphics producers.
- Photoshop provide a consistent work environment with other Adobe applications including Adobe Illustrator, Adobe InDesign , Adobe GoLive, Adobe LiveMotion, Adobe After Effects, and Adobe Premiere.

Objectives:

- By doing this Lab student will be able to edit various format of Images and give the various effects in images.
- We can use various exciting tools of Adobe Photoshop to edit image, which includes



Lab 3 and 4

Macromedia FreeHand

- Macromedia FreeHand is a vector-based drawing application. With FreeHand, you can create vector graphics that can be scaled and printed at any resolution, without losing detail or clarity.
- We can use FreeHand to create print and web illustrations such as logos and advertising banners. We can also use FreeHand to turn our artwork into Macromedia Flash animations.
- The FreeHand user interface contains a workspace and Tools panel that are consistent with other Macromedia products such as Macromedia Dreamweaver, Fireworks, and Flash, to give us a true integrated print and web solution. In addition, now we can view and test our freeHand documents in a Macromedia Flash Player window without ever leaving the freeHand environment.

Objectives:

- By doing this Lab student will able to design a various type of logos using the different tools of Macromedia freehand.



Lab 5 and 6

Macromedia Flash

- Flash is an authoring tool that designers and developers use to create presentations, applications, and other content that enables user interaction. Flash projects can include simple animations, video content, complex presentations, applications, and everything in between. In general, individual pieces of content made with Flash are called *applications*, even though they might only be a basic animation. You can make media-rich Flash applications by including pictures, sound, video, and special effects.
- Flash is extremely well suited to creating content for delivery over the Internet because its files are very small. Flash achieves this through its extensive use of *vector graphics*. Vector graphics require significantly less memory and storage space than bitmap graphics because they are represented by mathematical formulas instead of large data sets. Bitmap graphics are larger because each individual pixel in the image requires a separate piece of data to represent it.

Objectives:

- By doing this Lab student will be able to create different types of animation, use the action script to control the various objects.




Lab 7

Swish Max

- SWiSHmax is a new addition to the SWiSHzone family of Flash authoring tools. If you want to create stunning and powerful Flash animations without using Flash, then SWiSHmax is the tool for you.

Objectives:

- By doing this Lab student will be able to create different types of animation and give different type of effect to an object.



Lab 8 and 9

Adobe Premiere

- Adobe Premiere, a revolutionary nonlinear video-editing application that delivers a breakthrough render-free experience. Its high-performance toolset takes video and audio production to a new level, giving a professional edge. Adobe Premiere Pro delivers the power and precision you need to tell a story better and faster than ever before.

Objectives:

- By doing this Lab student will able to edit and publish the movie in various formats.



Lab 10 and 11

Macromedia Director

- Macromedia Director MX is the most popular authoring tool of choice for legions of web and multimedia developers. With Director, you can create movies for websites, kiosks, and presentations as well as movies for education and entertainment. Movies can be as small and simple as an animated logo or as complex as an online chat room or game. Director movies can include a variety of media, such as sound, text, graphics, animation, and digital video. A Director movie can link to external media or be one of a series of movies that refer to one another actions.

Objective:

- This lab should be done after using all the tools of the multimedia. By doing this lab student will be able to integrate all the multimedia objects like audio, video , images etc and will able to create different interactive presentations.



Project

Multimedia related project



References books;

- Tay Vaughan, Multimedia, Making it work
- Ralf Steinmetz and Klara Nahrstedt , Multimedia: Computing, communication & applications
- John Villamil-casanova and Louis Molina , Multimedia production, Planning Delivery
- Lee Allis, Inside Macromedia Director
- John R. Nyquist and Robert Martin, Director 8 and Lingo Bible
- Gary Rosenzweig and John Thompson, using Macromedia Director 8