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Course : 0553T / Multimedia System
Year : 2015

VIDEO
Session 06

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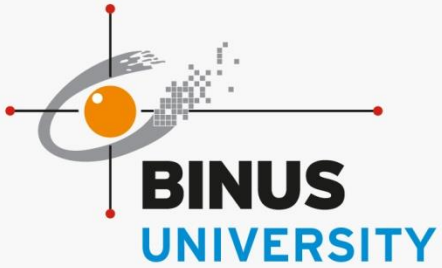

OUTLINE

- Introduction
- Analogue Video
- Digital Video
- Digital Video Containers
- Shooting and Editing Video
- Guidelines for Video

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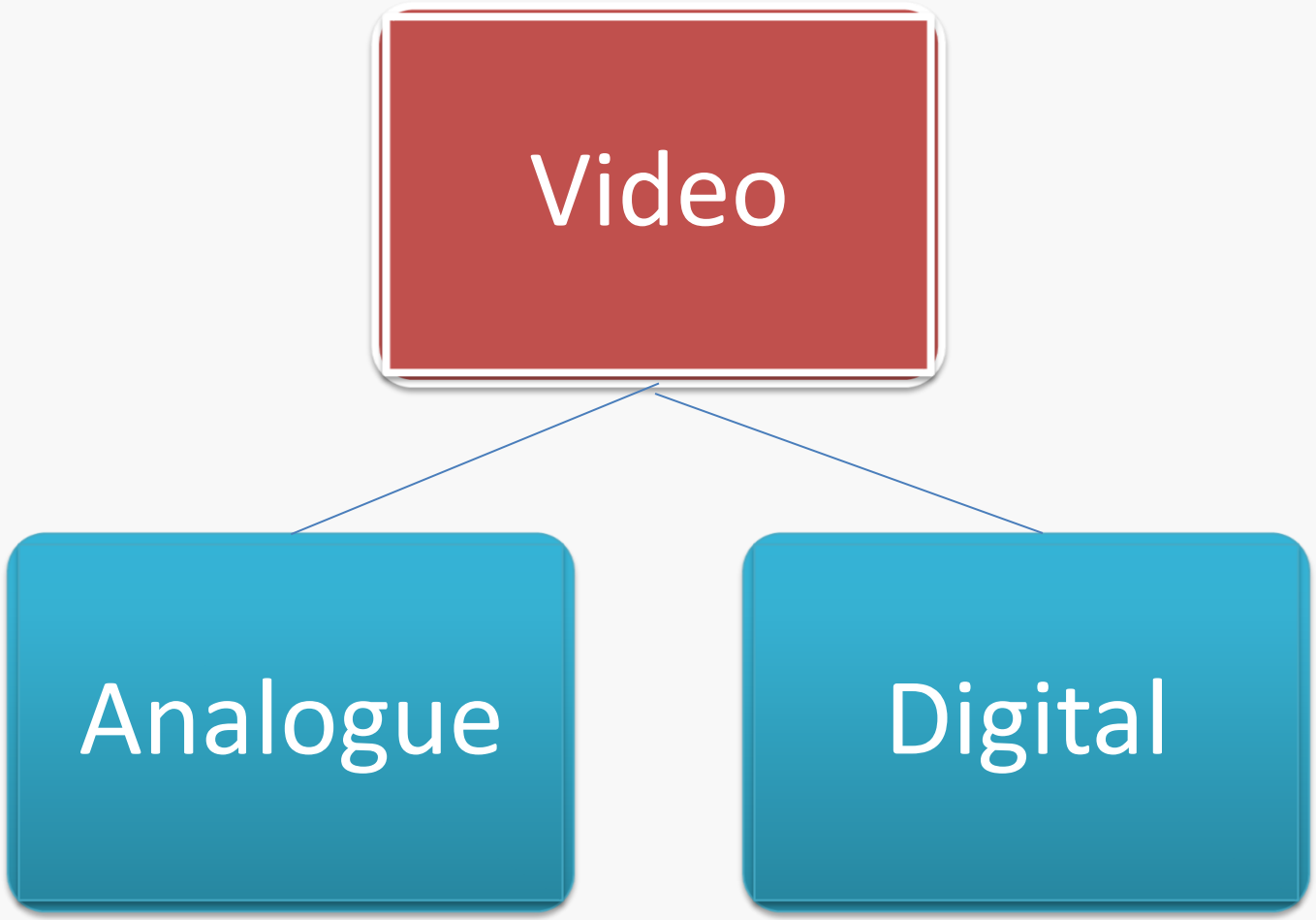
Introduction



INTRODUCTION

- Common standard Broadcast Video

NTSC	• North America, South America, Japan • 525 interlaced resolution lines • 30 frames per second (fps)
PAL	• Australia, South Africa, Europe • 625 interlaced resolution lines • 25 frames per second (fps)
SECAM	• France, Russia • 625 interlaced resolution lines • 25 frames per second (fps)
HDTV	• 1080 lines • 16:9 aspect ratio • 1920x1080 (1080i) or 1280x720 (720p)

Introduction

- The difference between VGA and HDTV aspects ratios

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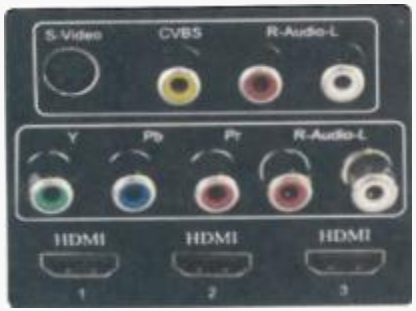
Analogue Video

- In analog system, the output of the CCD (Charge-Coupled Device) is processed by the camera into three channels of color information and synchronization pulses (sync) and the signals are recorded onto magnetic tape.



CCD Output

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Analogue Video

- As illustrated in Figure 6.1, each stripe represents information for one field of a video frame.

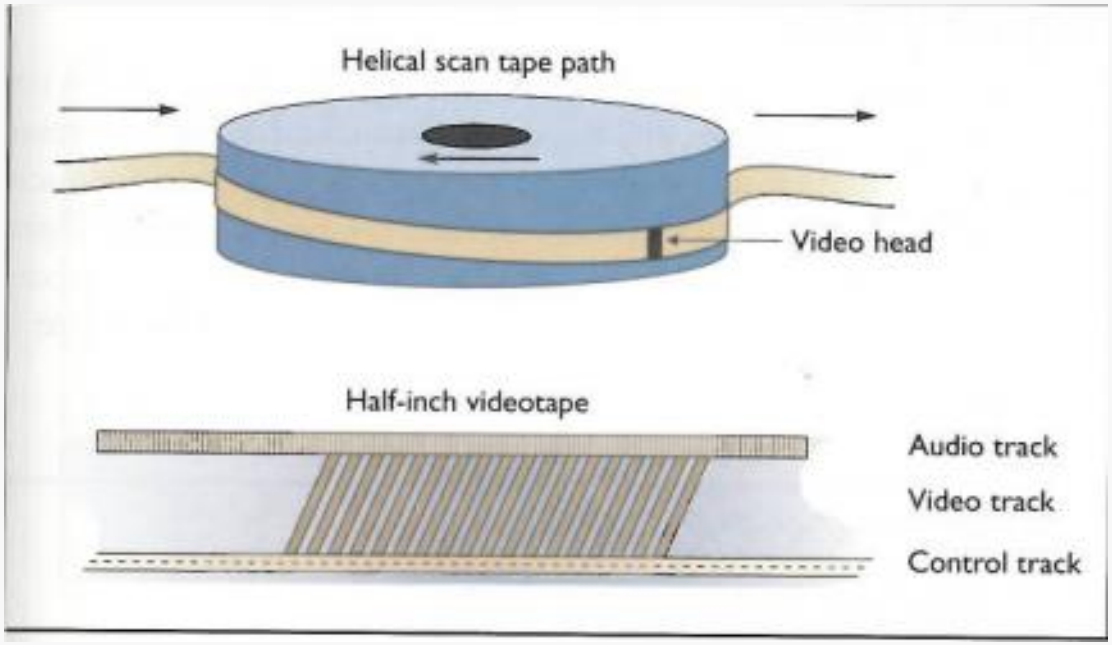
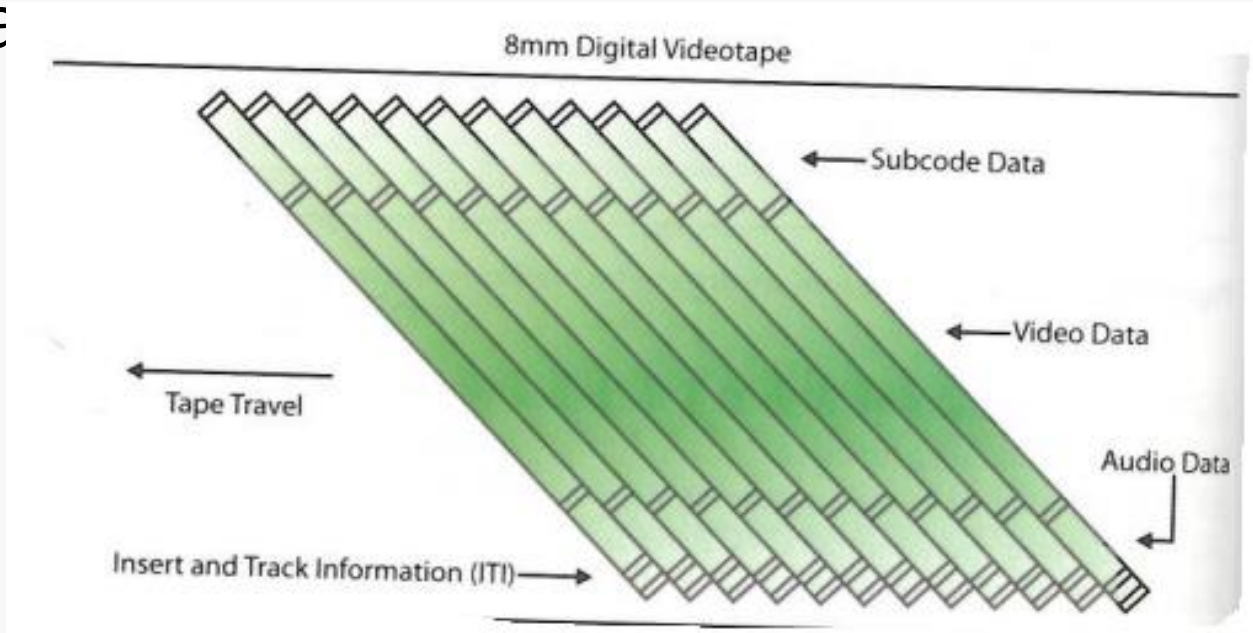


Figure 6.1

Digital Video

- In Digital systems, the output of the CCD is digitized by the camera into a sequence of single frames and the video and audio data are compressed before being written to a ta



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DIGITAL VIDEO

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DIGITAL VIDEO

- The quality of digital video depends on :
  - Screen Resolution
    - The number of horizontal and vertical pixels used to present the video image
  - Frame Rate
    - The number of individual video frames displayed per second
  - Compression Method (codec)
    - The particular algorithm used to compress and then decompress the digital video

Digital Video Containe

- A digital video architecture is made up of :

An algorithm for compressing and encoding video and audio

A container in which to put the compressed data

A player that can recognize and play back those files

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Digital Video Containe

- Common containers for Video :

.ogg	• Theora for Video , Vorbis for Audio
.flv	• Flash Video
.mp4	• MPEG
.mov	• Quick Time
.wmv	• Window Media Format
.rm	• Real Media
.webm	• WebM

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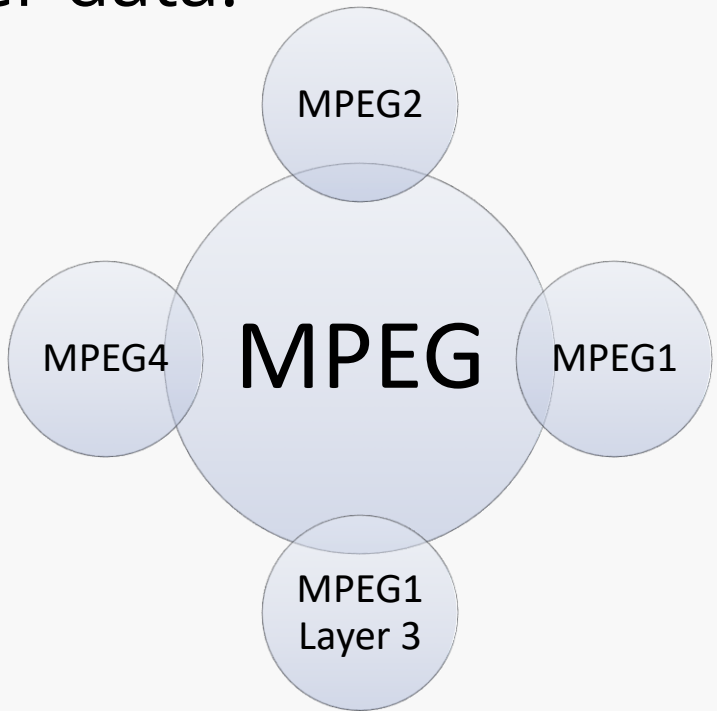
Digital Video Containers

- Codecs (Coder / Decoder) :
  - Digital Video Compression Schemes
  - The algorithm used to compress a video for delivery and then decode it in real time for fast playback
  - Different codec are optimized for different method of delivery (for example : from a hard drive, from a DVD, or over the WEB)

Digital Video Containers

- MPEG (Moving Picture Experts Group) :
  - Standard for digital representation of moving pictures as well as associated audio and other data.



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Shooting and Editing Video

- Shoot and Edit Video for use in Multimedia
  - Always shoot using a steady shooting platform
  - Storyboards are a useful exercise when planning a shoot
  - Good, even lighting is extremely important
  - Expensive stages are not required when using blue screen or Ultimatte techniques

Shooting and Editing Video

- Shoot and Edit Video for use in Multimedia (continue)
  - Avoid wide panoramic shots and camera motion when shooting for a small computer window on CD-ROM or the Web
  - Fonts for titles should be plain, sans serif and bold enough to easily read
  - Editing using Non Linear Editing (NLE) software such as Avid Media Composer, Adobe Premiere, and Apple Final Cut

Guidelines for Video

- The basic guidelines for Shooting :
  - Choose a camera carefully.
    - Consider : ex CCDs, Optics, Microphones,Storage Media,etc
  - Use a tripod or lean against a solid surface
  - White balance prior to shooting
    - Especially important when changing between different lighting conditions
  - Avoid shooting into light and backlit scenes
  - Limit pans and zooms

Guidelines for Video

- The basic guidelines for Shooting (Continue):
  - Frame the subjects
  - Make an inventory of required shots
    - Different agles
    - Wide shots, medium shots, and close-up
    - Establishing shots, reverse angles,over the shoulder, and point of view shots.
  - Use the highest resolution available
  - Add external microphones if required
  - Use headphones to monitor sound quality
  - Record background sounds for use in editing
  - Don’t break the time code

Guidelines for Video

- Basic guidelines for Editing :
  - Protect Source Video
    - Keep copies of original sources
  - Save a copy of the master video prior to rendering
- Basic guidelines for Rendering
  - Match codec, resolution, frame rate, and data rate to intended use and delivery medium
  - Use variable bit rate encoding when available

SUPPORTING MATERIAL

- http://www.mpeg.org/
- http://entertainment.howstuffworks.com/video-format.htm
- http://www.maximintegrated.com/en/app-notes/index.mvp/id/1184

Exercise

- Describe the architecture of digital video!
- Discuss several consideration in shooting and editing video for multimedia!