VIDEO CLIP

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OVERVIEW

- Consider the implications of using digital video in multimedia
- Discuss video analog and digital technologies and display
- Work with digital video containers and codecs to select the best video recording formats for multimedia project
- Find and acquire video clips
- Shoot and edit video for use in multimedia

USING VIDEO

- Carefully planned, well-executed video clips can make a dramatic difference in a multimedia project
- Before deciding whether to add video to your project, however, it is essential to have an understanding of the medium, its limitations, and its costs.

USING VIDEO

- Video is an excellent tool for delivering multimedia
- Of all the multimedia elements, video places the highest performance demand on your computer or device (memory and storage)
- Digital video has replaced analog video as the method of choice for making and delivering video for multimedia

HOW VIDEO WORKS

- Light reflected from an object passes through a video camera lens
- It is converted into an electronic signal by a special sensor called a charge-coupled device (CCD)
- Three CCDs (one for each color of red, green, and blue) to enhance the resolution of the camera and the quality of the image.

ANALOG AND DIGITAL SIGNALS

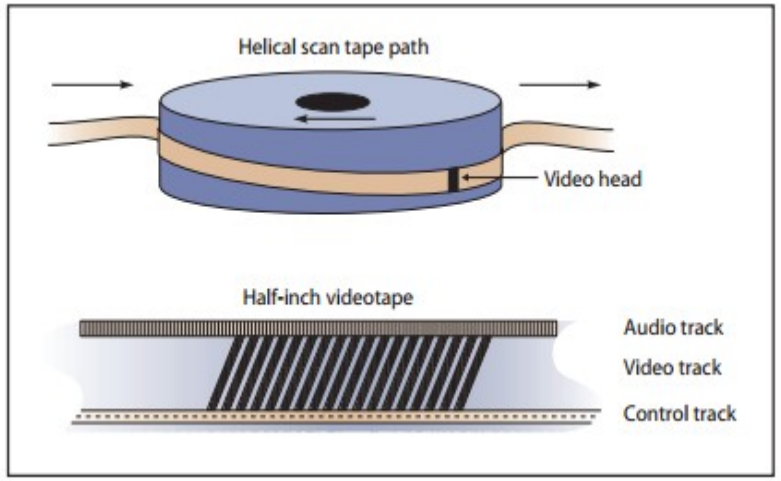
- Digital signals
  - Used by computers and have only 2 values: 0 and 1 or on and off.
  - All data that computers process is a series of 1 and 0.
  - Each signal is a bit

ANALOG AND DIGITAL SIGNALS

- Analog signals
  - Analog is a wave that is recorded or used in its original form
  - Most phenomena in our life are analog
  - Analog signals use wave variations.
  - Sound, light, and temperature are analog form
  - Humans' vision operates in analog mode

ANALOG VIDEO

- Analog video is essentially a product of the television industry
- Analog video stores information using analog video signals, film, videotape or other non-computer media
- Each frame is represented by a fluctuating voltage signal know as an analogue wave form or composite video



ANALOG VIDEO

- Three analog broadcast video standards are commonly in use around the world: NTSC, PAL, and SECAM
- These standards and formats are not easily interchangeable
- Example: traditional television signal

DIGITAL VIDEO

- Digital video is a product of the computing industry
- In digital video, analogue video signals are converted into numerical format (1 and 0)
- It creates the illusion of full motion by displaying a rapid sequence of changing images on a display device

DIGITAL VIDEO

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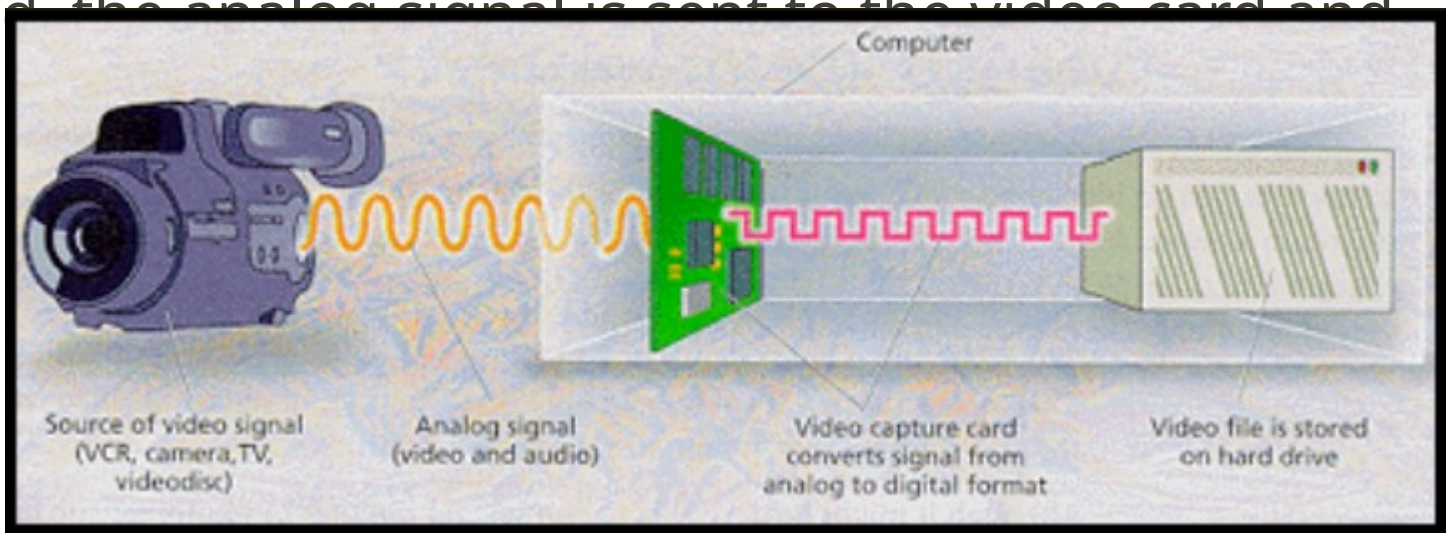
- Digital video is often used to capture content from movies and television to be used in multimedia
- A video source (like video camera) is connected to a video capture card in a computer
- As the video source is played, the analog signal is sent to the video card and converted into a digital file



DIGITAL VIDEO

- Digital video device produces excellent finished products at a fraction of the cost of analog
- Easier to edit and integrate into multimedia applications than analog video
- Digital video eliminates the image-degrading analog-to-digital conversion

DIGITAL VIDEO CONTAINER AND CODEC

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- A digital video architecture is made up of:
  - An compressing and encoding algorithm
  - A container
  - A player

DIGITAL VIDEO CONTAINER AND CODEC

- Containers may include data compressed by codec, and/or metadata, additional media
- The container is usually represented by a file extension
- Common containers for video are Ogg (.ogg, Theora for video, Vorbis for audio), Flash Video (.flv), MPEG (.mp4), QuickTime (.mov), Windows Media Format (.wmv), WebM (.webm), and RealMedia (.rm)

DIGITAL VIDEO CONTAINER AND CODEC

- Codecs are digital video and audio compression schemes that compress a video into a container for delivery and then decode it during playback.
- Common codecs: MPEC, Theora, Vorbis, H.263

DIGITAL VIDEO CONTAINER AND CODEC

- Media players may recognize and play back more than one video file container format, but not all.
- Not all HTML5 video containers and their codecs are recognized as playable by all Browsers

DIGITAL VIDEO FORMAT CONVERTERS

- Produce more than one version of a video (codecs in a container) to ensure that the video will play on all required devices and browsers
- Free, shareware, and inexpensive file format converters available for multiple platforms can be found on the internet such as handbrake (http://handbrake.fr), FLV converter (http://www.flv.com/flvconverter.html)

OBTAINING VIDEO CLIPS

- Many digital video sources exist but getting the rights can be difficult, time-consuming, and expensive
- Shoot your own video for a project (paying attention to the permission of people and elements appearing in the clip)
- Using a series of still images rather than video

SHOOTING AND EDITING VIDEO

- Constraints of using video in a multimedia project: to produce multimedia that is adequate and does its job, but doesn't break your bank.
- Learn the features and controls of your camera.
- Keep in mind the basics of video recording and editing.

THE BASICS OF VIDEO RECORDING

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- Always shoot using a steady shooting platform
- There is no easy way to convert between different aspect ratios (like 4:3 or 16:9), so it’s best to decide up front
- Prepare storyboards: camera and scene, shooting angles, lighting, action, special effects, and how objects move through from start to finish

THE BASICS OF VIDEO RECORDING

- Good, even lighting is extremely important
- Expensive stages are not required when using blue screen, green screen or matte techniques
- 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 be easily read

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REFERENCES

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- *Multimedia: making it works by Tay Vanghau, 8th edition*
- Li, Z. and S. Drew, M. (2004). *Fundamentals of Multimedia*. 1st ed. Prentice-Hall.