

# Video and the Computer

Computer Literacy 1 Lecture 21  
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## Topics

- Video
- Frame rates
- Recording
  - New ways of recording
- Capturing
- Editing
- Screen capture software



## Video

- The technology to electronically capture, record and transmit (etc...) a sequence of still images representing scenes in motion



## Frame rate

- Is the numbers of frame's per second
- Frame = number of still pictures per second of video
- Standard is 25 frames per second (fps)
- Film is shot in 24 frames per second
- Screen capture frame rate can be up to 40fps



## Recording

- You can use camcorder or even mobile phone
- Digital recording:
- MiniDV, Digital 8 (both tape)
- New: flash memory devices, DVD, hard disks in camcorder or directly on computer hard disks

## Problems recording

- Possible data loss
  - When you use tape or DVD you usually use this as back-up of your data Problem: You need device that can play your tape or DVD
- Camcorder using hard disk can be vulnerable
  - Problem: Data can get lost due to technical problems, hard drive must be shock resistant, still quite small in memory size
- Flash device like High Definition (HD) or Standard Definition (SD) card
  - 4GB cards usually coming with camcorder are too small

## Memory Stick vs MiniDV



## Capturing

- Now you're having your recording device - data needs to be transferred over to PC
- Video recorded on card can be captured on your machine using a
  - Card reader via USB2
  - Memory stick slot in PC

## Capturing



- Bit more hassle with the tape
  - You need to connect your camcorder to your PC using a cable either FireWire, IEEE 1394 or analogue
  - Takes normally real time to capture while HD and SD cards copy data much quicker
  - Whatever you do → your movie file can be about 150 MB big (60min). Compared to music - 60 minutes = 47MB

## Problem Capturing



- Some PC and the new MacBook don't provide FireWire or IEEE 1394 connections any more
- Which can be a problem for someone using a camcorder recording on MiniDV since FireWire and IEEE 1394 are the quickest possibilities to capture movie data on your PC
- But with the new Camcorders not using tape anymore it might be only logical to loose these connections

## Processing



- When you captured your video you normally chose a file format before or just used a default format given by your computer:
  - Can be .mv for Mac and .wmv for Windows
  - Problem they can't be played by all players
  - And their usually fairly big files

## Processing 2



- This is why you usually compress
- Makes files smaller and video material easier accessible for all players on computer with the right decoder (to decode container)
- Formats:
  - MPEG-2
  - MPEG-4
  - AVI (different container types)
  - DivX
  - HD
  - FLV

## Codec



- Video codec
  - Software that enables video compression and/or decompression
- Missing codecs:
  - Common problem for a user is that video streams can be encoded with a specific codec. If not exactly this codec is present and installed at the user's machine the video won't play.
- Normally all preinstalled players are having a very limited number of video codecs

## Codecs and other Help



- AVICodec: encodes a great percentage of AVI video on all platforms
- DivX encoder must be installed manually
- VideoInspector analyses most video containers/headers and can give links to the right codec
- VLC player can play almost every format

## Adobe Flash

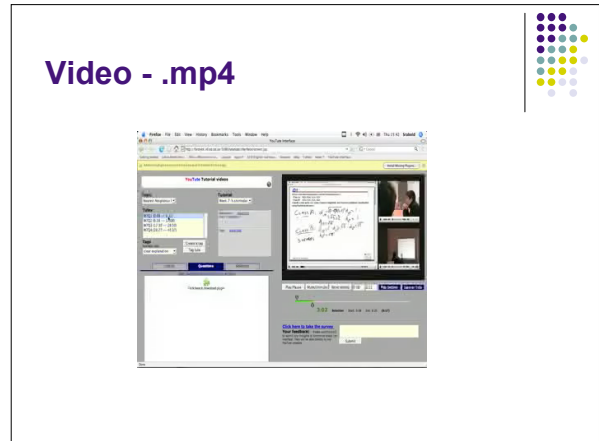
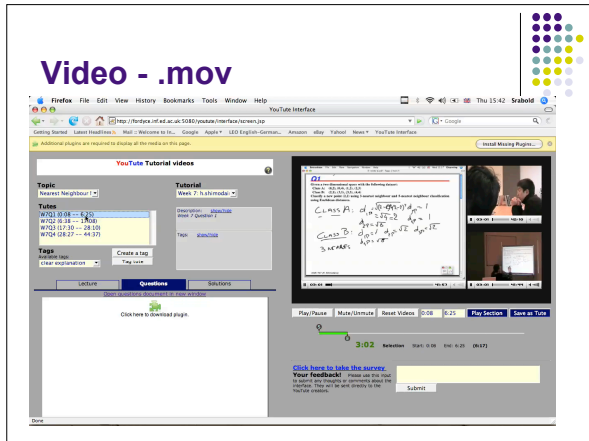


- Adobe Flash is at the moment a good bet if you want your video being embedded in a website and everybody able to play it
- Flash plug-in can be easily downloaded
- It's stable, can be decoded easily and delivers best quality

## Flash



- Flash itself is a container format (like AVI)
- Video in Flash is encoded in H.263 or new (Flash Player 8) in VP6
- Sound is in MP3
- .flv video can be included in all websites but writing a whole website in flash can be a problem since it doesn't really support platforms that aren't Windows



## Screen Captures

- Another possibility to record videos is screen capturing
- Software like iShowU on Mac and Camtasia on Windows enable user to record their PC screen while working on it or giving a talk
- Advantage - can be used as

## Editing

- There are different software packages available to edit video
- Some are free others you have to buy
- In general the software you buy is better to edit your videos
- Examples:
  - Final Cut (Pro), Adobe Premier, Pinnacle Studio 8, Ulead Video Studio etc...

## Editing Problems



- Frame dropping can be a problem
- Different frame rates another one
  - Imagine you capture your screen while a video is running
  - If your screen capturing program is not recording the same frame rate as your video running on screen you can either end up with a black window in your capture where the video's supposed to be or your capture could drop frames to catch up with the video shown on screen

## Key Points



- “New” recording devices vs “old” recording devices
  - For example memory stick new and MiniDv old
- Video data needs different codecs to be playable on different platforms
- Flash easy to embed into websites and playable for everyone in this way
- Screen capturing can be used to make video of what's going on on your screen
- Editing software
- And editing problems