11.3 Video

- A powerful medium, conveying:
  - Motion
  - Changing facial expressions
  - Associated audio
- Disadvantage:
  - Very slow for users with dialup connections
- Best for users with broadband connections
  - Which is approaching half of U.S. households that have Internet connection
 - Includes most company intranets

Video download times at 56Kb/sec

Description	Run time	Screen resolution	File size (MB)	Download time at 56 Kbps
Museum tour (high quality video)	7 min, 30 sec	320x180	24	1 hour, 12 min
Museum tour (medium quality video)	7 min, 30 sec	320x180	5.74	18 minutes
Museum tour (low quality video)	7 min, 30 sec	320x180	3.07	10 minutes
Speech (high quality video)	1 min, 19 sec	160x120	3.3	10 minutes
Speech (low quality video)	1 min, 19 sec	160x120	0.2	1 minute
Helmet camera video from mountain bike trail	1 min, 19 sec	170x145	9.5	30 minutes

Broadband is coming on fast

- "Some 31 percent of United States households that have Internet access have high-speed connections -- up 50 percent from a year ago, according to the Pew Internet and American Life Project. Broadband use is widely considered to be in its infancy, but the pace of adoption is considered by many industry analysts to be as fast as that of any mass-market technology in recent memory." – New York Times, June 12, 2003
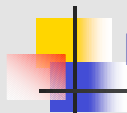
Broadband is coming on fast

- "**31%** of US households that have Internet access have **high-speed** connections
  (**up** 50% from a year ago),.
- **Broadband** use is considered to be in its infancy, but the **pace of adoption** is considered to be as fast as that of **any** mass-market technology in recent memory."
- "At the end of the first quarter of this year, of households with broadband access **68%** used **cable** modems, vs **31%** with D.S.L. service."
  – New York Times, June 12, 2003

Video download times at 1.5Mbps

Description	Run time	Screen resolution	File size (MB)	Download time at 1.5Mbps
Museum tour (high quality video)	7 min, 30 sec	320x180	24	2 minutes, 40 seconds
Museum tour (medium quality video)	7 min, 30 sec	320x180	5.74	38 seconds
Museum tour (low quality video)	7 min, 30 sec	320x180	3.07	21 seconds
Speech (high quality video)	1 min, 19 sec	160x120	3.3	22 seconds
Speech (low quality video)	1 min, 19 sec	160x120	0.2	1 second
Helmet camera video from mountain bike trail	1 min, 19 sec	170x145	9.5	1 minute, 3 seconds
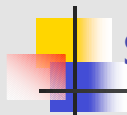
So: can you ignore those 56Kbps users?

- Of course not
  - Broadband penetration will never be 100%
  - It may level off rather below that
  - Those people number in the tens of millions; you can't ignore them
- But don't ignore the cable modem folks either
  - They definitely can download your video
  - Downloading the RealPlayer over a cable modem takes a couple of minutes
- And that's not the end: the visionaries are pushing for FFTH (Fiber To The Home), at 100Mbps

Tips for recording video
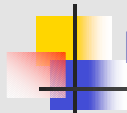
- Use a **tripod**
  - You get a much better image
  - The reduction of motion improves compression
- Use a neutral **background**
  - Better visually, and also improves compression
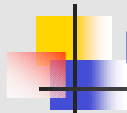- Get in **close** to your subject

Medium shot

Close up shot

Extreme close-up – the best

Close-up shots retain more facial detail
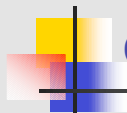
Close-up shot, magnified to show detail
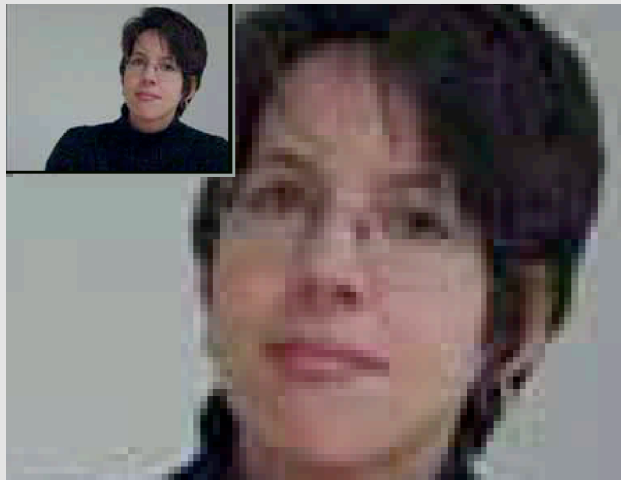
Text on a Web page is easier to read than a caption on a video

Jorge Toro, CS major

Jorge Toro, CS major

Video formats for the Web

Name	File extension	Originator	Additional codec?	Streaming?	Additional player?
Audio-Video Interlaced	.avi	Microsoft	Yes	No	No
QuickTime	.mov .qt	Apple	Yes	Configurable	No
MPEG Video (MPEG-4)	.mpg	Motion Picture Expert Group	No	No	No
Real Video	.ram .rm	RealNetworks	No	Yes – requires server software	Yes

Video vs Animation

- Animation: **synthetic** apparent motion created through **artificial** means
- Can be stored more **compactly** than video, speeding downloads
- Offers a richer set of **interactions** than video
- An attention-getter
- Good for **demonstrating** transitions and for **explaining** complex systems