Video 2

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Who are we?

- **Carlos Nash**
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- **Mystery Instructor**
MORE ABOUT YOUR CAMERA
Revisiting your camera

• In Video 1, you learned:
  – Some of the basic features of your camera
  – Some basic techniques of recording video and audio
  – Some basic camera handling techniques

• Today, we will revisit some these in more detail.

• We will also cover some technical issues regarding video recording.
Lines of video resolution

• The number of horizontal lines in an image.
  – Standard definition (SD) in the US: 480 lines
  – High definition (HD) in the US: 720 or 1080 lines

• However, other countries have other specifications. For example:
  – SD in the UK and Europe: 576 lines
  – HD in the UK and Europe: 720 or 1080 lines
Lines of video resolution

1080 lines
Frame (Refresh) rate

- **Frame rate:** is the rate at which a monitor/television produces an image.
  - Film: 24 frames/second
  - NTSC television: 60 fields/second for video material; 30 frames/second for film material
  - PAL television: 50 fields/second for video material; 25 frames/second for film material
Color systems

• Since your videos may be displayed on a television, there are some other additional complications to be aware of.

• **Color system**: how television encode/decode color signals.
  - US, Japan, western South America: **NTSC** (National Television System Committee)
  - Europe, Australia, south Asia, most of Africa: **PAL** (Phase Alternating Line)
  - France, west Africa, Russia: **SECAM** (Sequential Color with Memory)
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Distributing your video

• You should carefully consider how you will distribute your videos with community members and colleagues.

• If you plan to make tapes, DVDs, Blu-Rays for people to play on stand-alone machines:
  – You will need to convert your video signal (painful)

• Alternative is to simply play your video on a computer or upload to a video site such as YouTube.
Digital video

• Most HD digital video cameras will encode the video file using the **AVCHD format** (Advanced Video Coding High Definition).

• Usually your camera will come with software to help edit your files.

• More expensive editors, such as Adobe Premiere or Final Cut Pro, can also edit these files.
SD Cards

• SD cards are rated according to how fast it can transfer data to/from the card.

• For video cameras, manufacturers recommended that you use Class 4 or higher.
SD Cards

• Approximate recording times for an 8 GB card:
  – Highest quality (24 Mbps): 40 min.
  – Next best quality (17 Mbs): 60 min.
  – Average quality (12 Mbps): 85 min.
  – Below average quality (7 Mbps): 140 min.
  – Lowest quality (5 Mbps): 180 min.
Digital vs optical zoom

• There are two types of zoom on a video camera: digital zoom and optical zoom.
  – A camera can have either or both types.

• Digital zoom:
  – works by magnifying a part of the captured image using digital manipulation
  – the image loses quality very quickly when zooming

• Optical zoom:
  – provided by the lens (i.e. the optics)
  – does not lose image quality
Digital zoom

50mm
Optical zoom

50mm

200mm
Special recording modes

• Many cameras come with pre-programmed auto-exposure settings to help make quick adjustments to your camera.
  – They can also help you make the best images when you have very little time to calculate the film speed, shutter speed, aperture settings, and color modes.
Special recording modes

- **Portrait**: large aperture leads to sharp foregrounds, and blurry backgrounds
- **Sports**: foreground and background are reasonably sharp
- **Low Light/Night**: large aperture, higher film speed for lower digital noise
- **Snow/Beach**: compensates for reflected sunlight, prevents subjects from being underexposed
Cinema Mode

• Video images look very different from cinema images.
  – Video images are ‘smoother’ looking because it has a higher temporal resolution (e.g. 60 images/second)
  – Film looks ‘jerky’ because it has lower temporal resolution (e.g. 24 frames/second)

• Some cameras will allow you to record at 24 frames per second.
  – Do you need to capture something that may occur faster than 42 msec? If so, do not use 24 frames/second.
Image stabilization

• Image stabilization reduces blur and shaky shots.

• Some recordings come with 2 settings:
  – High (dynamic): compensate for a higher degree of camera shake (e.g. Walking)
  – Low (standard): compensate for a lower degree of camera shake (e.g. Stationary)

• **Warning:** image stabilization should not be used when the camera is on a tripod. It leads to undesirable image pumping and poor focus.
Face detection and autofocus

• Some cameras have an algorithm to detect faces.
  – The camera uses this information to automatically select video settings.
  – **Warning:** face detection is easily fooled. It will mistakenly detect portraits and some animals.

• Autofocus
  – Sensor controls a motor to automatically focus on a selected point
  – May not work well in low light situations, or when the subject is highly reflective or fast-moving.
  – **Warning:** too many subjects can fool the autofocus system.
OPERATIONAL TECHNIQUES
Shot composition (lens coverage)

- A series of terms have evolved to describe how to effectively shoot people.
- **Hint:** None of the lines go through joints!
Shot composition (lens coverage)

- **Detail shot** (extreme close-up): capture isolated detail
- **Face shot** (very close-up): mid-forehead to chin
- **Big close-up**: full head height
- **Close-up**: head and upper chest
- **Medium close-up**: head and lower chest
Shot composition (lens coverage)

- **Medium shot**: cuts just below the waist
- **Knee shot**: cuts just below the knee
- **Medium long**: full body with head room
- **Long shot**: person occupies $\frac{1}{2} - \frac{3}{4}$ screen height
- **Extreme long shot**: person occupies less than $\frac{1}{2}$ screen height
Shot composition (camera viewpoint)

• You can orient your subject in a variety of ways:
  – Frontal shot
  – Profile or side shot
  – Three-quarters frontal
  – Back or rear shot

• You can change the height of the camera
  – Low shot
  – Level shot
  – High shot
  – Overhead shot