Photo Storage & Video Editing

Analog vs Digital

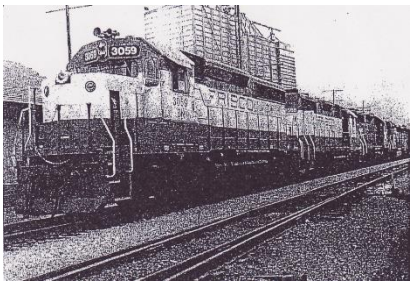
- Clocks are a good way to understand the differences between analog and digital information.

analog

digital

- Data in modern devices is stored in digital form, as a collection of 1's & 0's.
- Analog data degrades over "generations" of copies.

vs



- Digital data is less susceptible to degradation due to copies.
- An exception to this is when the data is stored in a "lossy" compressed format.

vs

Lossy compression

- Some common, lossy compression formats:
  - mpeg, mpeg2, mp3, mp4 – Audio and video
  - jpg and gif – Images
- Most modern, digital cameras use jpg by default.

- Rule of thumb: When editing jpeg photos, avoid multiple editing sessions on the same photo file.
    - Instead, go back to the original photo, if you can.

Taking digital photos

- This is not the topic of today's session.
- I suggest you visit the website Glade Presnal shared with us (http://www.jasonrichclasses.com) and view these two presentations:
    - "Take & Share Awesome Photos Using Your iPhone or iPad"
    - "Showcase and Share Your Vacation Photos"

Converting analog photos to digital

- A flatbed scanner is the best way to digitize your photos.
    - Many "consumer-grade" scanners available today will be good enough for most needs. Most of these will scan at pixel densities of 300 – 2400 dpi (dots-per-inch)
    - For higher-resolution needs there also are *photo scanners*, which have a much higher dpi capability. For example, the Epson Perfection V550 Photo Scanner ($170 on Amazon.com) is a highly-rated product that can scan at 6400 dpi
- Rules of thumb for scanning:
    - The higher the dpi, the more space the storage the photo will take. (But storage is cheap and getting cheaper by the day.)
    - It is better to scan at a higher dpi and then scale the photo down to a smaller size for printing than to scan at a lower dpi and then scale the photo up.
    - When uploading photos for printing, your printing company may have suggestions on resolutions for particular print sizes.

Printing your photos

- Rule of thumb: Upload your photos and have them printed on photo paper (for example, with Wal-Mart) rather than printing them on your home printer.
    - If you use plain paper on your home printer, the quality of the paper and image will be lower than a commercial print.
    - Whether you use plain paper or photo paper at home, the cost of paper + ink will be (significantly) higher than for a commercial print.
- Check with your photo printing company to learn the suggested resolutions for particular sizes of prints.
- For example, Wal-Mart suggests these minimum image resolutions:
    - 4 x 6: 540 x 360 pixels
    - 5 x 7: 546 x 390 pixels
    - 8 x 10: 960 x 780 pixels

Multi-Scan

- *Multi-scan* is the term used to describe scanning multiple photos at one time.
    - Many of today's scanners come with this capability built into the included software.
    - Multiple photos (perhaps of differing sizes) can be scanned in one take.
    - One photo file will be created for each photo, cropped to its edges.
    - There are a number of commercial products can split photos out of a scanned image, if your scanner software cannot do so.
    - *Gimp* (free) also has a plug-in available for splitting photos from a scan.

Digitizing slides

- Most photo scanners digitize not just photos, but also negatives and slides.
    - Digital photos can be created from negatives.
    - There are trays included with or available for photo scanners that align slides and allow you to scan several at a time.

- For folks with hundreds or thousands of slides, there are scanners with manual or automatic slide feeders built in.
    - Many of these are dedicated devices, only usable for slides.
    - Google “35mm slide scanner”.
- Rule of thumb: After scanning the slides, examine them to see if you need to rescan after cleaning the slide.

Storage needs for digital photos

- Most cameras today store there images on removable, SD or micro-SD memory cards.
    - Older devices or some smartphones may not have removable memory.
    - Whether the device has removable memory or not, you almost certainly can connect the camera to your computer via USB or wireless.
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- Current capacities for Micro-SD card include:
    - 8GB (about $6),
    - 16GB (about $8)
    - 32 GB (about $15)
    - 64 GB (about $25)
    - 128GB (about $50)
    - 256GB (about $100)
- Your camera may not work with the larger sizes; check your user’s manual for limitations.
- A typical 10-megapixel (about 10,000,000 dots) photo stored in jpg format ranges from 10MB to 18MB in size.

- So, about how many 10-megapixel photos will fit on a micro-SD card (worst case)?
    - 8GB – 455
    - 16GB – 910
    - 32 GB – 1,820
    - 64 GB – 3,640
    - 128GB – 7,280
    - 256GB – 14,560

Safely storing your photos

- If you *DropBox*, you can install its app on your Apple, Android, or Windows phone or tablet, and then enable the *Camera Upload* feature.
    - This feature automatically uploads photos from your device to your DropBox account immediately after the photos are taken.
    - The photos are stored (by default) in a DropBox folder named *Camera Uploads*.
- Use caution with the Camera Uploads feature!
- If your device is connected to DropBox via your carrier's cellular network, you may exceed your monthly data plan.
    - Thus, you may want to synch your photos manually, once you have access to a wireless network.
- If you upload your photos to your computer, there are many options for safely storing them.
    - Keep them on your hard drive or SSD. (Not safe!)
    - Burn to CDR/DVDR/BDR.
    - Store on a flash (thumb) drive – 64GB for about $30.
    - Store on an external drive – 2TB Western Digital drive for about $90 – about 116,500 10-megapixel images.
    - Store them in the Cloud.
- Whichever you choose, you should keep an "off-premises" copy.

- Arguably, the safest storage solution for your digital photos is "the Cloud".
    - A backup service, such as Carbonite or Mozy – monthly fees.
    - Free backup services, such as iCloud, Google Drive, Microsoft OneDrive, Flickr, Picasa, etc. – data mining may occur, plus they may share your information with 3rd party advertisers. Read the fine print if concerned.

Video editing – Why?

- Perhaps you have a video camera or a smartphone capable of capturing video.
    - Today's smartphones can take very good video.
    - Most are capable of capturing at 720p or 1080p.
    - More and more are capable of capturing 4K video (4 times the resolution of 1080p HD video).
- Even if you are an expert cinematographer, you will need to edit your raw video if you want it to look its best.
- What type of editing might you do on your video?
    - Add title and trailing text.
    - Create smooth transitions between scenes.
    - Rearrange or edit out scenes.
    - Add voiceovers, soundtracks, or sound effects.
    - Add pointers or text overlays for emphasis or clarification.

Video editing products

- In addition to the expensive, commercial products, there are a number of video editors that you can use for free.

- In general, there will be a tradeoff between complexity of use and availability of features.
    - Larger feature set → more complex to use
    - Easier to use → fewer features
- Video editing products
- The product that we will look at today is less complex, but still has a good selection of features.
- It's name is HitFilm 4 Express.
    - It is available for both Windows and MacOS computers.
    - We will use the free version today.
    - There is a professional version, which has more features.
    - You can download it from the site
      https://hitfilm.com/express
- Video editing products
- There are a number of other good video editing packages available for free.
- You can learn more about them at the URL
  http://www.techradar.com/news/software/applications/the-best-free-video-editor-1330136
- VideoPad Video Editor
- Demo time!