Choosing the perfect digital camera

Things to know
Questions to ask
What to pay

Resolution
- More pixels = better prints
- Megapixel: one million pixels
  - 1.0 MP: snapshot size pictures (3 x 5)
  - 2.0 MP: 5 x 7 prints
  - 3.0 MP: quality 8 x 10 prints
  - 4.0 MP: high-end photography, more like SLR cameras

Example

5 Megapixel Camera

2 Megapixel Camera
SmartMedia

- SmartMedia used to be one of the most common types of digital camera storage media.
- It was used in most Olympus and Fuji digital cameras until the introduction of the xD Picture card, in 2002.
- SmartMedia is being phased out for newer memory types.
- If you buy a camera that uses SmartMedia it might be a good idea to stock up (memory cards), though. They might not be available for too much longer.
- SmartMedia is available in capacities up to 128 megabytes.

MicroDrive

- The MicroDrive card is actually a miniature hard drive housed in a Type II CompactFlash chassis.
- The IBM MicroDrive was the first compact memory card to offer a full 1 Gigabyte storage capacity.
- Although bypassed in capacity, the MicroDrive is a good buy on a dollar-per-byte basis.
- MicroDrives have a reputation for being delicate and unreliable. Because of their moving parts, MicroDrives use more battery power than flash memory.
- Compared to new, high-speed CompactFlash cards, MicroDrive seek and write times are fairly slow.
Memory Stick

- Memory Stick was developed by Sony for their CyberShot digital cameras and other Sony electronic devices.
- With the exception of a very few cameras, Memory Stick is only compatible with Sony digital cameras.
- Memory Stick is available in capacities up to 256 MB, and Sony's new Memory Stick Pro is available in capacities up to one gigabyte.

xD Picture Cards

- Introduced by Olympus and Fuji in 2002, the xD Picture card is the newest digital camera memory format.
- It's tiny size - 0.97” x 0.98” x 0.67” - means it can be used in very small cameras.
- Can also be used in any CompactFlash compatible camera with the available CompactFlash adapter.
- Currently available in capacities up to 512 MB, with larger capacity cards to be available soon.

SD Cards

- The smallest available memory cards, Secure Digital and MultiMediaCard memory allow for very small cameras and can also be used in selected PDAs, organizers, phones, and MP3 players.
- The current maximum capacity for Secure Digital and MultiMediaCard cards is 512 MB.
- The only difference between the two memory types is that Secure Digital cards have a write-protect switch for added data security.
CompactFlash Cards

- CompactFlash is one of the most common types of digital camera memory.
- Most high-end digital cameras, and all digital SLRs are CompactFlash compatible.
- There are two physical sizes of CompactFlash - Type I and Type II.
- Type II is thicker and some cameras will only accept Type I CompactFlash.
- Type II CompactFlash is usually higher capacity. The most common Type II CompactFlash cards are mechanical, MicroDrive memory cards.
- The main benefit of CompactFlash is that it has a controller chip in the card. The controller chip allows higher transfer rates.
- CompactFlash is inexpensive, easy to find, and works in a lot of digital cameras. For those reasons, it’s one of the most desirable types of digital camera memory.

Card Readers

- Card readers are the most efficient way to download your digital memory cards and a highly recommended digital camera accessory.
- Card readers plug into your computer via USB or FireWire port and allow you to transfer your files without using your camera’s batteries or dealing with cables.
- The memory card will show up on your computer as a separate, removable drive when it’s plugged into the reader.
- Card readers are available in internal and external models with USB, USB 2.0, and FireWire connections.
- USB 2.0 and FireWire readers have considerably faster transfer rates than most cameras - another good reason to use a card reader instead of using your camera’s supplied USB connection.

Memory

- Removable media is preferable
  - You can always have a backup card
  - Depending on your computer set-up, a card reader can increase the ease and speed of downloading pictures
- “Maximum storage capacity”
  - Based on the number of images you can store at the lowest resolution setting.
Liquid-Crystal Display

- LCD screen: miniature display located on the back of the camera
  - Allows for previewing of pictures
  - Displays setting menus
  - Access to review pictures in memory
- Shooting pictures using the LCD
  - Must hold the camera away from you—shaky hands
  - Light can affect your view of the display

LCD

Flash

- Flash is a must for indoor photography
- How many settings are available
  - Automatic: camera decides
  - Fill flash: flash fires no matter what
  - No flash
- Red-eye reduction mode: not a biggie, doesn’t always work but Photoshop does.
Flash

- High end offerings
  - Slow sync mode: shooting in very low light
  - External flash mode: allow attachment of a separate flash unit to the camera

Lenses

- Focal length: measurement of the distance between the center of the lens and the image sensor
  - Focal length determines the lens's angle of view and size at which your subject appears in the frame.
- Standard lens: 35mm
- Digital reference is an equivalent
  - "5mm lens, equivalent to 35mm lens on 35 mm camera"

Lenses

- Wide-angle: 14mm – 35mm
  - Landscapes, seascapes, and interiors
- Telephoto: 85mm – 1200mm
  - Gets you "closer" to the subject
  - Sports, portraits, and wildlife
- Focal Length Comparison
**Zoom**

- **Optical Zoom**: true zoom lens

- **Digital Zoom**: in-camera processing
  - Digital zoom enlarges the image area at the center of the frame and trims away the outside edges of the picture.
  - Reduces image resolution and image quality

**Exposure**

- **Programmed autoexposure (P)**: the camera selects the proper aperture and shutter speed for you based on the object you focus on.
- **Aperture-priority autoexposure (A)**: you select the aperture (f-stop) and the camera sets the appropriate shutter speed
  - Allows variation in depth of field

- **Shutter-priority autoexposure (S)**: you select the shutter speed and the camera chooses the aperture
  - Stop action

- **Manual exposure (M)**: Enables you to set both aperture and shutter speed.
The details

- Batteries
  - AA lithium (rechargeable) – 3x the life of standard alkaline
    - Most preferred – don’t have a “memory”
  - Rechargeable NiCad, NiMH – have a “memory”, can reduce the usability
  - Consider the cost of replacing batteries
  - LCDs drain batteries quickly
- AC adapters: allows you to plug in the camera while downloading images
- Tripod mount

At the store

- Ask the salesperson to demonstrate the camera’s operation
  - How do the controls work
  - How do you access the menus
  - Is it easy or hard to make changes
- Physical fit – hold the camera
  - Is it comfortable in your hands?
  - When looking through the viewfinder and LCD are you comfortable, steady, can you see?

At the store

- Durability: will it last
  - Open and close the battery door
  - Open and close the memory card door
  - Remove the lens cap
- Computer and printer hookups
  - Will it connect directly to your computer through a USB or IrDA?
  - Do the necessary cables come with the camera?
  - How easily will the images transfer?
At the store

- Software
  - What software comes with the camera?
  - Is it compatible with your operating system? Win 95, Win 98, Win 2000, Win XP, Mac OS 10?
- Warranty / Return Policy
  - What does the warranty cover?
  - Who do you need to return it to for repairs?
  - Is there a restocking fee if you return it?

Olympus C-4000

- 4 MP
- Auto or Manual
- 4 AA batteries
- SmartMedia (16MB included)
- Built in & Hot shoe flash
- Tripod mountable
- 3x optical zoom
- Uncompressed TIFF

$347.57 @ Wal-mart

Olympus C-50

- 5 MP
- Auto or Manual
- 1 lithium rechargeable
- xD picture Card (32MB)
- Built in flash
- Tripod mountable
- 3x optical zoom
- Uncompressed TIFF
Fuji FinePix

- 3 MP
- Auto or Manual
- 4 AA alkaline batteries
- xD Picture Card (16MB)
- Built in flash
- Tripod mountable
- 3x digital zoom
- Compressed JPEG

$299.99 @ Best Buy

Canon PowerShot

- 3.2 MP
- Auto or Manual
- 4 AA alkaline or 4 NiMH
- CompactFlash (16MB)
- Built in flash
- 3x optical zoom
- Compressed JPEG

$299.99 @ Best Buy

Olympus C74

- 3.2 MP
- Auto or Manual
- 4 AA batteries
- xD Picture Card (16MB)
- Built in flash
- Tripod mountable
- 10x optical zoom

$399.99 @ Circuit City
Sony MVC-CD500

- 5 MP
- Auto or Manual
- Rechargeable
- 156 MG CD-R/RW
- Built in & Hot shoe flash
- Tripod mountable
- 3x optical zoom
- MPEG movie

$599.99 @ Sony.com

Other places to check

- Ebay Stores: ~675 stores with digital cameras and/or digital accessories
  - Or direct auctions
  - Be a cautious buyer – read the seller reviews!
- Academic Superstore – student discounts
  - www.academicsuperstore.com
- Student Advantage Tech Store
  - www.edu.com

Assignments

- Monday – read Camera & Lens

- Wednesday
  1. bring your camera, accessories, and instruction manual to lab
  2. Bring 5 photos and be prepared to explain why you like them