

Illustration: NEETA WADIKER



It's a Snap

Yasvin Singh, invitee at the recently held LinuxWorld Conference and Expo in San Jose, California, had his picture taken with Andy Grove, Intel's chairman, and Linus Torvalds, creator of the Linux operating system. Naturally, he wanted to share his proud moment with the admiring folks back home in Patiala by sending them the photographs. This was accomplished in practically no time—a handy digital camera did the trick and, within a few minutes, thrilled relatives and friends got to see Yasvin beaming from ear to ear, arm casually draped over the shoulder of ol' buddy Linus.

Of course, if Yasvin had only a conventional camera available, he could still have managed to do this. Photographs taken with a regular camera can be transformed to digital images on a computer screen, but involve a long process. Professional (publication quality) photography uses transparency film which undergoes five colour model conversions. When the photograph is first

taken, the camera converts real-world colour into the RGB (Red, Green, Blue) model on film. This RGB is then converted to three black-and-white separations, then to CMY (Cyan, Magenta, Yellow) model, the CMY back to a combined colour film image for scanning, and then back to RGB on screen via a scanner.

Digital cameras greatly simplify this process by eliminating all steps except the first and the last. The camera takes an image in RGB format, which is then transferred to the computer, still in RGB format. With a conventional camera, the original image on film and the image on screen are both in RGB, but the intermediate steps are not. Consequently, there is no guarantee that the final image has the same colours as the original. A digital

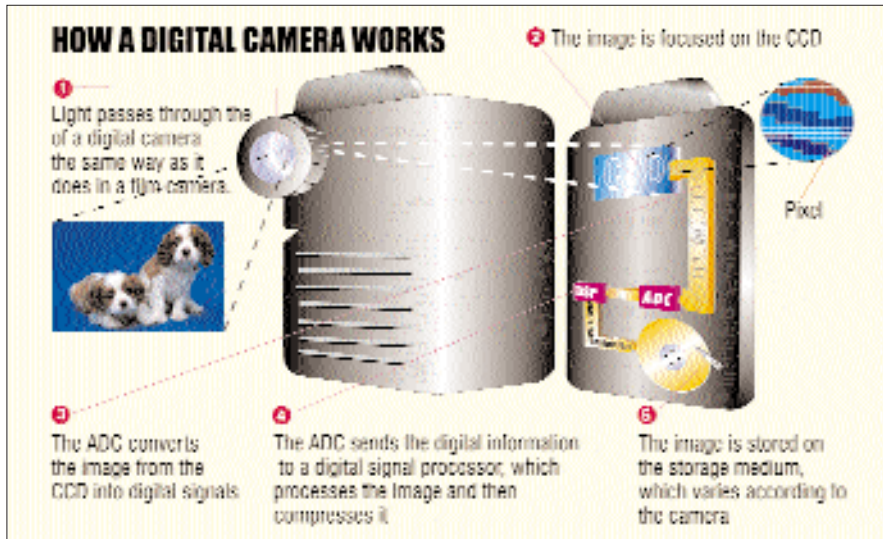


www.chip-india.com/october1999/digi-

camera involves no such hassles, since the image on screen is the same image that the camera saw.

Superficial resemblance

A digital camera looks much like a conventional camera. There is a lens and a shutter, there is no film, hence it is perfectly safe to pass a digital camera through an X-Ray machine. In place of the film is a Charge Coupled Device (CCD). CCDs use resolutions similar to computer displays, such as 640x480, 1024x768, or more. However, camera specifications mention CCD resolution in linear figures. This number is arrived at by multiplying the horizontal and vertical components of the resolution, so 640x480 becomes 307200. Because these numbers are huge, vendors often refer to resolution in terms of mega-pixels, or million pixels (mega is standard computing usage for a million). When buying, take the highest CCD resolution that you can afford since it determines the image quality that the camera can produce. Next, consider the additional features and the software bundle.



The CCD in a camera is sometimes replaced with a CMOS (Complementary Metal Oxide Semiconductor). Yes, it is the same CMOS that saves your BIOS settings on your PC. A CMOS is cheaper and consumes less power, but it tends to produce electronic noise in the image under certain conditions and is therefore not a very popular component in digital cameras. Settle for a CMOS-based camera only if you aren't very particular about image quality.

How it clicks

When the shutter is pressed, the camera first sets the focus, exposure time and the white balance. It then charges the CCD. This can't be done in advance because the CCD can't hold the charge for long. Next, the image is copied out of the CCD into RAM, compressed, and finally written to the storage device. The camera is unusable during the entire process, and this causes a brief delay between photographs. Some cameras use a two-stage mechanism: when the shutter is slightly depressed, the camera performs initialisation functions like focusing and charging the CCD. The actual photograph is taken after the button is fully depressed. This method is also used in some conventional cameras in the Nikon F series, for instance.

The lens in a digital camera is identical with the lens in a conventional camera. Because high-quality lenses are difficult to fabricate and are rather expensive, some digital cameras let you use the same lens that conventional camera

use. All lenses aren't interchangeable, though, so check for compatibility with your camera before you count this as a plus point in choosing a digital camera.

Bridging the gap

There are many ways to transfer data between camera and computer. The old standard was via serial/parallel cable. This method is slow and has since been superseded by ultra-fast USB cabling. It still limits the freedom of your camera, since the low amount of in-memory storage in such cameras requires you to make a transfer after every few images.

Floppy disks were used for some time and infrared made a brief appearance, but the winners are specialised storage devices. At least two such card-sized formats are in wide use today CompactFlash and SmartMedia. CompactFlash cards are slightly bulkier but can hold up to 96 MB, while SmartMedia can do only 16 MB. Some cameras also sport PC Card (formerly PCMCIA) hard drives that can be hot-plugged into a notebook computer. Finally, we have card readers that connect to a computer via USB, parallel or SCSI. Models that can read from CompactFlash, SmartMedia or PC Card are available.

Powering up

Nickel Metal Hydride (NiMH) batteries are your best bet. Though they take up to 16 hours to recharge, they aren't very expensive, so keeping an additional fully-charged pair shouldn't be a problem. Nickel Cadmium (NiCd) cells too

are rechargeable but are slightly cheaper. Though very popular, these cells have a problem. They need to be discharged completely before they can be charged again or you'll end up with a dead battery pretty soon. This is because the unused part of the cell tends to crystallise and becomes unusable. Other options are ordinary cells, alkaline cells and Lithium-Ion cells. Not all cameras support Lithium-Ion, so check this before buying. The flash and the LCD preview screen are heavy power consumers and are largely responsible for frequent cell replacement.

Speed is the key

In spite of the wonderful features that a digital camera offers, don't expect to become a press photographer in a week. The technology is fast advancing, but isn't yet good enough to replace your trusty SLR. A high-quality digital camera costs upwards of 8 lakh and still can't give you the quality of a good conventional camera that costs less than one-tenth that amount.

Digital cameras score resoundingly in

BUYING TIPS

- 1 Speed should be your prime requirement if you are planning to buy a digital camera.
- 1 When buying, take the highest CCD resolution that you can afford since it determines the image quality that the camera can produce. Only then consider the additional features and the software bundle.
- 1 In general, do not count digital zoom as a positive feature when choosing a camera.
- 1 All lenses aren't interchangeable so check for compatibility with your camera before you count this as a plus point in choosing a digital camera.
- 1 Not all cameras support Lithium-Ion batteries, so check this before buying.
- 1 In spite of the wonderful features, digital cameras are still no match for a good SLR. A high-quality digital camera still can't give you the quality of a high quality conven-

the speed department. Speed should be your prime requirement if you are planning to buy a digital camera. For instance, if you need to cover a press event and get the printed photographs in a couple of hours but don't have immediate access to a film processing unit and a transparency scanner, a digital camera is ideal for you.

KIRAN JONNALAGADDA 