The New York Times

STATE OF THE ART

David Pogue

The Big Picture: Megapixel Race At Milestone 8

ON life's final exam, the section intended to gauge your maturity and wisdom will probably look like this. "Mark each statement true or false: More money always makes you happier. A larger strawberry always tastes better. More megahertz always means a faster computer."

Too easy? All right, then, answer this: Why are so many people convinced that more megapixels means a better digital camera?

Within three years, camera companies rolled out four-megapixel cameras, then five, then six and seven. Now, if you can believe it, eight-megapixel consumer cameras are available for under $600.

Let's get one thing straight: the number of megapixels is a measure of how many dots make up a digital photo, not its quality. An eight-megapixel photo can look just as bad as a three-megapixel one — just much, much bigger.

The problem with this digicam arms race is that more megapixels mean bigger files. You need a much bigger memory card, you'll pay more for the camera (for its faster processing circuitry) and you'll have to wait a lot longer for those giant files to download to your computer. Once there, they also take longer to transfer, open and edit.

All right. Now that you've been given the Lecture, it's only fair to acknowledge that more megapixels do come in handy in three situations. First, an eight-megapixel photo has enough resolution for giant prints — 20-inch-by-30-inch posters, for example. Second, more megapixels give you the freedom to crop out a huge amount of a photo to isolate the really good stuff, while still leaving enough pixels to make reasonably sized prints.

Third — let's be honest here — it's fun to blow people away by telling them you have an eight-megapixel camera.

Five big-name camera companies make eight-megapixel models under $800: Nikon, Olympus, Konica Minolta, Canon and Sony. (Sony declined to provide a camera for evaluation in this roundup, saying that its entry has reached the end of its life cycle. Memorial services have not yet been scheduled.)

Fortunately, these companies didn't just slap eight-megapixel sensors into so-so cameras. Each company also incorporated excellent lenses, fast circuitry and other

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CANON POWERSHOT PRO 1

EXTRAS The PowerShot has a big L.C.D. screen (two inches diagonally) and includes a 64-megabyte memory card. But the on-off switch is minuscule.

NIKON COOLPIX 8800

UP CLOSE The Coolpix offers sharp closeups 1.2 inches from the subject and a 10X optical zoom. It lacks a zoom ring, however, and performance suffers in dim light.

OLYMPUS EVOLT E300

SPEEDY The Evolt is a true single-lens-reflex camera; while you get no preview screen, audio or movies, the consolation is fast focusing, fast startup and minimal shutter lag.

KONICA MINOLTA DIMAGE A200

STEADY The Dimage, the only eight-megapixel camera under $600, has an antishake feature that helps with slow-shutter and zoom shots, and it records 15-minute movies.

WHAT'S NEXT

For Simpler Robots, A Step Forward

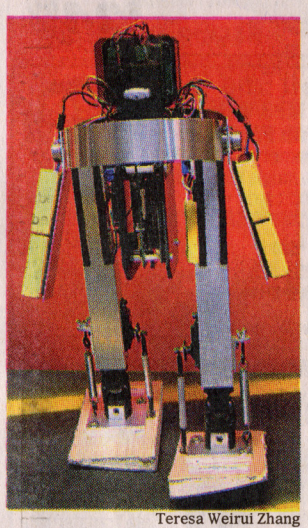
By ANNE EISENBERG

WASHINGTON

THE moment of truth had come for the knee-high robot standing on its improvised runway at a hotel news conference.

Reporters circled it, their microphones and cameras trained on the machine as it tried to start up. Then a curious 13-year-old boy who had joined the throng reached out, poked his fingers between the robot's metal legs and gave them an exploratory push.

With that, the robot, built at the Massachusetts Institute of Technology, lived up to its nickname, the Toddler. It rocked gently until the poking stopped, steadied itself and marched firmly across the level surface, a tabletop propped up on cinderblocks.



Teresa Weirui Zhang

WALK THIS WAY A knee-high robot designed at M.I.T. was one of three unveiled last week that walk far more naturally.

If two-legged robots are ever going to walk among people, they may look a lot like this sturdy machine and two others, introduced Feb. 17 on the makeshift catwalk at the annual meeting of the American Association for the Advancement of Science.

The robots — the others were built at Cornell and at Delft University of Technology in the Netherlands — are designed in a way that differs significantly from standard creations. One of the robots moves so efficiently that in the future it may be able to amble along for a day, not the 20 or 30 minutes most robots now manage without recharging or refueling.

"And our robots walk far more naturally," said Andy Ruina, a professor at Cornell who took one of the robots to the meeting and whose nephew Josh Bennett, of Chevy Chase, Md., did the unscripted poking.

The design may be important not only for future energy-saving robots, but also for intelligent prostheses — leg and foot replacements for amputees.

Dr. Ruina's robot and its companions from Delft and M.I.T. are descendants of some early ramp-walking machines, mechanical devices that have been around for a century. These contraptions — toys like waddling penguins and later two-legged robots — were not powered in any way. Instead, they relied on gravity and the mechanics of objects in motion to walk stably down sloping surfaces.

Modern versions of the machines, called passive-dynamic walkers, have been built for decades and

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INSIDE

On the Net, Unseen Eyes

As video cameras increasingly relay their images online, the audience may be wider than intended.

Viktor Koen

By PATRICK DI JUSTO

ACCORDING to the complaint filed in United States District Court in Nashville, members of a girls' basketball team visiting Livingston Middle School in Tennessee spotted the camera right away. "It was high up in a corner, near a ceiling tile in the visitors' locker room," said the girls' lawyer, Mark Chalos. "It seemed to look out over the changing area."

The girls were wary at first, Mr. Chalos said, but ultimately didn't believe the camera

official reviewed the video and reported that it showed the girls in "bras and panties."

That was enough to enrage the parents. But what they learned as they questioned school authorities outraged them even more. Logs from the server holding the school's video show that the images were available, unsecured, over the Internet, Mr. Chalos said, and indicate several instances of access by unknown outsiders.

With the proliferation of surveillance cameras in everyday life and Webcams at home computers, the ease with which unsecured cameras can be detected on the Internet has become an increasing cause of concern. Last month bloggers began reporting on the ability to tap into thousands of raw Webcam feeds with a few simple Google searches, and the Spanish police arrested a suspect on charges of developing a computer virus that can activate a Webcam without the owner's permission.

The Yankee Group, a market research firm, estimates that as many as 13 percent of American households have a Webcam attached to one of their computers, often sitting on top of a monitor in a living room or a bedroom.

Like each Web page, each camera on the Internet has an address, and unless the cameras have been concealed behind software firewalls, their addresses make them specifically searchable and identifiable

BASICS

Tools to Add Moving Images To Online Musings

By SANDEEP JUNNARKAR

John Hendrix

THE Oxford English Dictionary added "blog" to its entries in 2003. The editors may soon have to consider "vlog" and "moblog" as well.

Web logs — the personal online journals better known as blogs — use text to dissect nearly every conceivable topic, and now video blogs, or vlogs, which incorporate moving images, are on the rise. Mobile blogs, or moblogs, have brought blogging into the cellular age by allowing people to post video and photos taken with camera phones to a blog, or to call in an audio posting.

But the object remains the same as with traditional blogs: to inspire (or to provoke) others to post responses to one's ruminations and images.

Some vloggers are further blurring the lines between journalism and blogging by producing news reports of local interest. Steve Garfield of Boston, a self-described citizen reporter, took a video camera to investigate, among other things, whether election campaign workers were following the law by staying 150 feet from polling stations. He posted his report at **stevegarfield.blogs.com/videoblog/2004/09/150_feet.html.**

Some others produce what appear to be avant-garde film clips. The variety appears as diverse as that found in text blogs.

These offshoots of blogging are producing a cottage industry. Software makers are creating tools for maintaining vlogs, and new Internet services are catering to video and mobile blogs. Syndicated feeds devoted to tracking new video are springing up along with vlog and moblog directories, promising to drive traffic to your video and photos.

Setting Up a Blog

Dozens of free Web-based services, including Blogger.com (owned by Google), Microsoft's MSN Spaces, LiveJournal.com and Blog-City.com, enable people to create a blog within minutes.

Most free services provide only basic features, like posting text, and limit the photos, audio and video that users can upload. But these sites typically offer premium services for $2.50 to $5 a month that provide far richer features.

For example, bloggers without access to a computer can use LiveJournal.com's paid service to update their blogs with an audio post over the phone. Likewise, premium service allows bloggers to post a blog entry by e-mail. Blogger.com provides this feature free. Another advantage of paid services is that you are not obliged to have banner advertising placed on your page by the host company.

One drawback to these Web-based services is that the addresses assigned to the blogs can be convoluted — like **ihatemyflatmate.blogspot.com** or **www.livejournal.com/community/american-idol/** (yes, those are actual blogs).

Many bloggers view those who use a free service, or even a premium one, as somehow not fully devoted to blogging. To add a sense of permanence, some bloggers establish their own Web addresses, or domains, like myblog.com. "I think this shows that the person is obviously more invested in their blog," said Howard Rheingold, the author of "The Virtual Community: Homesteading on the Electronic Frontier" (Perennial, 1994). "They are hanging out a shingle as being an expert or maven on a particular subject."

Doing so can be complex, but some companies like LivingDot **(livingdot.com)** make the process easier by offering a service that registers a domain name, provides server space and installs blogging software for $10 a month. Blogging software is also available separately from sites like Moveable Type **(www.sixapart.com/moveabletype)** and WordPress **(wordpress.org)**.

As a compromise, TypePad's $8.95-a-month Plus plan allows bloggers to use its Web-based service **(www.typepad.com)** but map it to their domain name.

Incorporating Video

You can use many programs, like Microsoft's Windows Movie Maker or Apple's iMovie, to edit your video, adding captions and background audio, and format it for the Web. But such software is powerful enough to create full-length documentaries and may be overkill for beginning vloggers. Vlog It, a $100 program from Serious Magic **(seriousmagic.com)** to be released in April, promises to simplify the video editing process; it is a pared-down version of Visual Communicator 2 Web ($190), available now.

The program allows you to place a Web-cam or a camcorder on top of your monitor and to read from its on-screen prompter. You can also drag and drop still pictures, other video and sound clips from your camera, camcorder or cellphone onto the prompter script. When that section scrolls up, it automatically becomes part of your recorded video.

If you select a free blogging service, you'll also have to find a place to store your video online. One option is to upload video to the Internet Archive **(www.archive.org)**, a nonprofit enterprise dedicated to preserving past Web pages as well as being a library for freely available digital content. Creative Commons, a nonprofit property rights management system, offers a free tool for Windows and Macintosh that lets you upload video to the Internet Archive called ccPublisher **(creativecommons.org/tools/ccpublisher)**.

A curator at the archive examines the video (to make sure the clip plays, does not violate copyright and does not contain excessive violence or sex) and provides a Web address where the video is stored. It may take as long as 72 hours, though, before your video is posted. Our Media **(www.ourmedia.org)**, using storage space donated by the Internet Archive, plans to begin a free service this week that allows posting and viewing video within minutes.

Mobile Blogging

Cellular telephones with camera and video capabilities are proliferating, and with them the practice of mobile blogging, or moblogging. While most blogs remain text-based, mobloggers deal almost exclusively with pictures and some video.

People can now transmit photos and video taken with hand-helds or cellphones directly to the host sites. Several free services are available, including SnapNPost.com, TextAmerica.com and Buzznet **(buzznet.com)**. You create an account, choose a gallery address (for example, www.snapnpost.com/your-username/), and provide some information about your phone model and wireless service to configure the service. TextAmerica provides a premium service for $50 a year that lets you secure your gallery with a password.

Many services, like Blogger and TypePad, let you upload images using cellular service. Keep in mind, though, that transmitting data by cellphone can be costly. Check with your wireless carrier about monthly plans for data transfer, usually about $20 a month for unlimited service.

Drawing Traffic

Bloggers who want to reach a wider audience can follow a few simple strategies honed by advanced bloggers to draw traffic to their once-fledgling journals, including frequent updates and contributing to discussions on other blogs with a link back to your own.

One way to keep readers coming back is to use the Really Simple Syndication (R.S.S.) feature available on most Web-based blogging services as well as the more advanced software. This feature allows readers to subscribe to your site and be notified by e-mail with a headline and a link for each new posting.

Most blogging services offer similar ways to set up R.S.S. In TypePad, for example, navigate to Edit Configuration, click on Publicity & Syndication. You decide whether to provide an excerpt only or the entire post. With a click of a button, you can create a "Syndicate Link" that can be displayed on your blog.

TypePad, Blogger and several other blogging services also offer a blog-specific syndication format called Atom. Setting it up on your site is similar to setting up R.S.S. feeds.

For video bloggers, there are special readers for R.S.S. feeds, called aggregators, like mefeedia **(mefeedia.com)** and ANT **(www.antisnottv.org)**. Vloggers can join mefeedia free; subscribers to their feed will be notified when a new video is posted. ANT is more like TiVo for vlogs. The desktop-based freeware automatically downloads video to your hard drive from the vlogs you subscribe to. It is available only for the Mac, but a Windows version is in development.

If your blog becomes a destination for a growing audience, you may be able to turn your hobby into a business, or at least a hobby that pays for itself, with ad placement from Google AdSense **(www.google.com/adsense/)** or BlogAds.com. With AdSense, each time a reader clicks on an ad placed on your site, you get a sliver of revenue. BlogAds, on the other hand, generate revenue based on the number of visits to your blog.

Google does not provide details about how much Web publishers can make — going so far as making them sign contracts that state they won't divulge their earnings. BlogAds says that you can earn $50 to $750 a month with about 100,000 visits.

"My sense is that a lot of bloggers, including people with a lot less traffic than mine, are finding that the blog ads let it be a hobby that is effectively free for them and maybe even generates a little beer money," said Glenn Reynolds, whose blog at **instapundit.com** gets just over five million visits a month. "That seems to me to be a pretty good thing."

For Simpler Robots, Taking a Step Forward

Continued From First Circuits Page

have long been thought useful models of human locomotion, Dr. Ruina said. But in the past the machines were not able to walk on level ground.

Now the researchers from the three universities have shown that the classic passive-dynamic walking machines need not depend on gravitational power. Instead, they have put small motors on their robots and shown that they can walk on level ground. The robots' workings are described in detail in the journal Science.

"Our machines show that there is nothing special about gravity," said Russ Tedrake, a postdoctoral researcher at M.I.T.'s department of brain and cognitive sciences, and one of the Toddler's creators.

Unlike famous state-of-the-art walking robots like Honda's Asimo, which typically have complex control algorithms that demand extensive, real-time computation, the Cornell biped, as well as the Delft one, walk with simple control algorithms, Dr. Ruina said. "Our sensors detect ground contacts, and our only motor commands are on-off signals issued once per step," he said.

Perhaps to show how much the passive-dynamic robots depend on mechanics and not on electronic calculating power for their humanlike gait, the Delft robot has a blue bucket for a head, and the Cornell robot has an orange plastic bird attached to its head.

This less-is-more approach also applies to sensory feedback. The Cornell and Delft robots don't use sophisticated, real-time calculations or a lot of feedback as do other robots that continuously sense the angles of their joints, for example. "This suggests that human walking, too, might require only very simple controls," Dr. Ruina said. (The M.I.T. robot does incorporate sensory feedback as a means of learning how to walk.)

Michael J. Foster, director of the National Science Foundation division that supported some of the M.I.T. research, said the work

Using a less-is-more design approach to show that complex objects can be controlled simply. And walk like a human.

demonstrated that complex objects could be controlled simply. The walking robot goes through complex motions, yet explicit computer control is not needed over every joint.

"Much of the control is given to us by the laws of physics rather than by our own efforts in programming," Dr. Foster said.

Marc Raibert, president of Boston Dynamics, a software engineering company that specializes in human simulation, said that the principles of passive-dynamic design would be important for future robot generations. "Every practical legged robot will incorporate these principles," he said. "If you make the mechanical structures right," for example, adjusting the mass and length of the upper and lower legs to mimic the natural dynamics of walking, "the legs do the right thing from physics."

In passive designs, he said, the mechanism has built into it the elements that let it move naturally. "This way we can avoid relying on the computer to have the knowledge of how something should move," he said.

Cornell's robot uses very little energy to walk forward, mainly because its passive-dynamic design emphasizes the natural interaction of gravity and inertia and minimizes the role of control and actuation. "Our robots use a 10th, a 20th or a 50th the energy of all other powered robots," Dr. Ruina said, depending on the robot and the way the energy is calculated. "We let mechanics take care of a lot of the motion, as opposed to using motors to control all the joints in time."

The Cornell robot has a 12-volt battery on each arm to provide the energy the motor uses to power the ankles when they push off. Springs in the legs store the energy. Each arm is mechanically linked to the opposite leg.

Steve Collins, a doctoral student at the University of Michigan, designed the robot when he was an undergraduate working under the direction of Dr. Ruina. "As each leg swings forward," he said, "a small motor stretches a spring," which is released to provide a push. As the forward foot lands, a microchip tells the rear foot to push off.

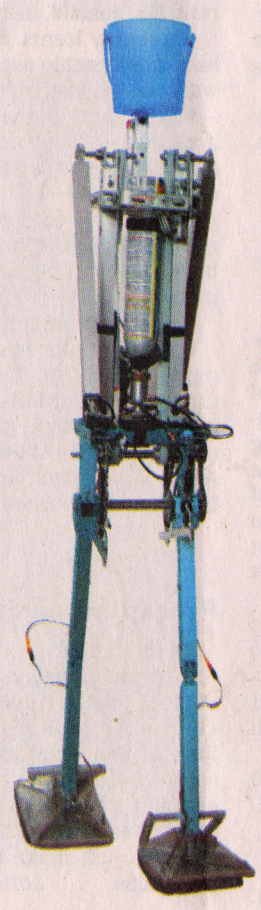
It was important, Mr. Collins said, to bear in mind the way people move naturally. He said "the leg is analogous to a pendulum," which can either be let go to swing or driven exactly in a movement. He added, "We are letting the legs swing naturally."

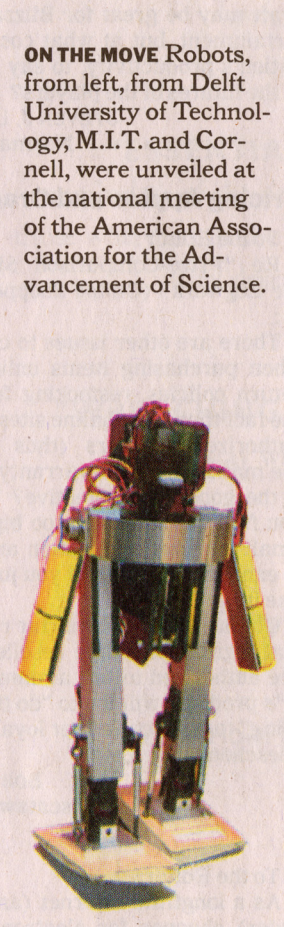
Right now, the passive-dynamic robots move forward only, and they will need far more power, for example, to climb stairs.

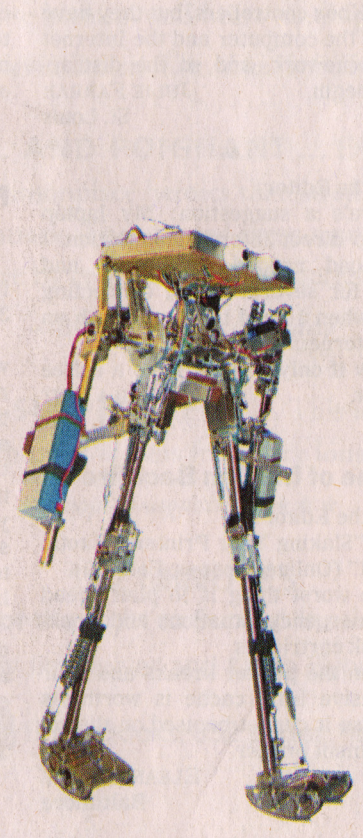
In the future some of their principles may combine with those used in sophisticated robots in which every angle is controlled. "Perhaps we'll use natural dynamics for walking when there's no high energy requirement," Mr. Collins said. Even if the machines are not entirely built on passive-dynamic principles, the parts that are may lead to a reduction in cost.

Mr. Collins hopes to use the insights gained in building the Cornell robot in work he is doing on prostheses. With the National Science Foundation's support, he has started a company to develop a prosthetic foot. "The study of passive-dynamic models has given us insights into the way energy is used in walking," he said, in particular details of step-to-step transitions that have a large impact on the energy used in walking. "Based on these insights," he said, "we should be able to build prosthetic feet that require less energy, making it a lot easier to walk."

Dr. Tedrake of M.I.T. is not sure how passive-dynamic robots will play out in the future. "For now," he said, "we'd like to convince Japanese robotic makers to insert some of our ideas into their robots."







ON THE MOVE Robots, from left, from Delft University of Technology, M.I.T. and Cornell, were unveiled at the national meeting of the American Association for the Advancement of Science.

Photographs by Associated Press

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