# COMPUTER MAGIC

by Ken Sheldon

With computer-generated imagery (CGI), today's filmmakers can produce special effects that otherwise would be impossible. Superhero movies like *Spiderman* (2002) and *The Fantastic Four* (2005), which show people swinging from skyscrapers or bursting into flames, are the result of CGI.

To make a character like Superman fly, filmmakers originally would project an image of moving clouds or skyscrapers on a screen and suspend an actor in front of it. Today, actors are more likely to perform in front of a blue or green screen. Later, the screen is removed and replaced with a separately filmed background. By combining this screen technology with CGI, filmmakers also can mix live actors with computer-generated backgrounds, special effects, and even other characters. This lets them create scenes that otherwise would be too expensive, time-consuming, or dangerous for the actors.

So, if you are a filmmaker and you do not have the money to build an expensive set, build it in the computer! In 2004, *Sky Captain and the World of Tomorrow* became the first movie to use *only* computer-generated backgrounds. What if you cannot afford to hire a cast? You can make them, too! In 1995, *Toy Story* was the first feature-length movie to employ characters created totally by computer. Today, computer-generated characters are even realistic enough to stand in for live actors — or characters that do not exist in real life. Yoda, originally a puppet in *The Empire Strikes Back* (1980), became a fully computer-generated character by the time he appeared in the final installment of *Star Wars* (2005). Creepy Gollum from *The Lord of the Rings* movies (2001–2003) was a CGI character based on the movements of actor Andy Serkis and a technique called ***motion capture.***

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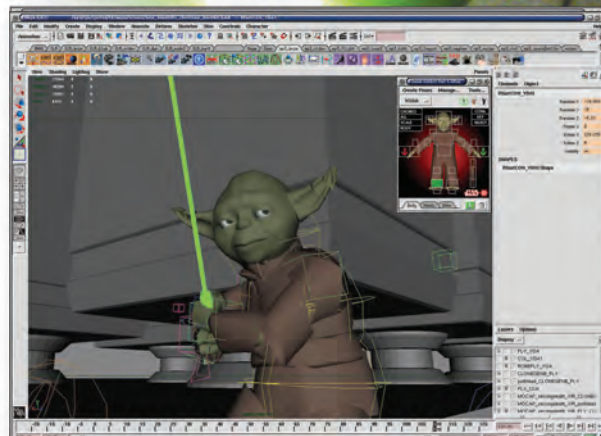
In **motion capture**, an actor wears a skintight costume that is studded with reflective dots; computers then pick up the dots' movements and construct an animated character.