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Is "digital cloning" the future of movie making?

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"Maleficent," the story of a winged fairy turning into a wicked sorceress, brought in $70 million this weekend.

The film's special effects are state of the art. When the tiny fairies fly, you see "pixie-perfect" human faces on them.

What was once filmed on a sound stage, is now shot on a "light stage," reports CBS News' Carter Evans.

The surreal laboratory is the brainchild of Paul Debevec who heads up the University of Southern California's Institute for Creative Technologies. He's re-inventing the way movies are made by digitally cloning actors.

"We want to create that perfect digital puppet that has every skin pore, fine crease and the ability for any little twitch or bulge or buckle of skin that the real person would've had," he said.

More than 6,000 computer-controlled LEDs and 50 cameras capture every nuance. The key to creating believable virtual humans is how the computer measures both light reflecting off the surface of the skin and penetrating beneath it. The result is a perfect digital clone that can be inserted into any scene.

The evolving technology has been used in more than a dozen films. In "Avatar," it placed digital humans in a virtual world. In "Gravity," Sandra Bullock's face was scanned and illuminated to appear as if it were reflecting light from the space station.

"You can see the lights going crazy. It's kind of like being inside a firework," said actor Sharlto Copley, who plays King Stefan in "Maleficent."

The lead actors were all scanned to create life-like images for digital stunt doubles. Actress Imedla Stauntin became the face of a fairy. They took photos of her with light from every possible angle.

"If we want the digital character to look the same way as the real person would have, we have to know where that real person would have responded from, like, from the right, from the left, from above, from below," Debevec said.

It's more than just movie magic, however. The lab gets much of its funding from the Department of Defense to produce virtual reality training for the military. Also, in a revolutionary new project, Debevec has teamed up with USC's Shoah Foundation to scan Holocaust survivors so their stories will live long after they are gone.

"We can project it in a way that it's life size and it's 3-D, it doesn't require 3-D glasses," Debevec said.

Pinchas Gutter, 81, survived five concentration camps. When the project is complete, his holographic image will be able to interact with students through voice recognition.

Stephen Smith, executive director of the Shoah Foundation, said it creates eye contact.

"It's engaging, it's visceral, it's very much from the soul of the individual," Smith said. "As display technology gets better, which it will do as the years go by and we'll get used to seeing holographic displays in our everyday lives, this will seem very normal."

The technology is evolving quickly and the possibilities seem endless, especially when it comes to trimming the budgets of summer blockbusters.

"Eventually we're gonna be able to make an entire Hollywood feature film that looks like anything on the epic scale of any huge production, in a small room with motion capture... with light stages surrounding people by LEDs, and you do it for a lot less cost," Debevec said.

The possibilities seem endless.

"If I were an actor today, I would definitely want to get myself digitized," Debevec said. "I would want to keep that on my own hard drive at home and probably even license that to productions that want to do flashback sequences of me in the future. Or, perhaps, to eventually film without the real actor's participation."

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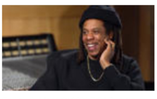
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