



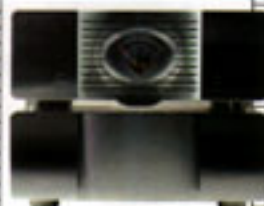
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POPULAR SCIENCE

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RECONNAISSANCE TECH

MINIATURE CHOPPER TO THE RESCUE

A remote-controlled drone scours disaster sites for signs of life

THE NEXT TIME A HURRICANE or flood wreaks its havoc, victims could find help in the form of a small, unmanned helicopter. The vehicle, which resembles a remote-controlled toy, has already made a test appearance in areas hit by Hurricane Katrina.

Engineers at Isensys, a robotics firm in Indian Harbor Beach, Florida, designed the 10-pound helicopter, known as the IP3, to give emergency responders a fast and inexpensive way to look for people in need of help. "You can fly over and see who is really in distress. It's all about getting information," says computer scientist Robin Murphy, who runs the Center for Robot-Assisted Search and Rescue at the University of South Florida. Murphy's team used the IP3 in Louisiana to remotely scan storm wreckage for victims.



FOUR EYES
The IP3 mini-copter used its four different cameras to image this storm-battered parking lot in Bossier City, Louisiana.



To do its job, the IP3 relies on four cameras. One acts as the eyes for the pilot, relaying data about the vehicle's location back to the controller. The others—a camcorder and two types of infrared cameras—can swivel in any direction to scan the environment.

Several groups, including Murphy's, are experimenting with unmanned miniature airplanes. The IP3 has a key advantage in rescue operations, though, because it can fly nearer to the ground than those craft and can hover for a closer look.

Isensys CEO Chandler Griffin says the rescue version of the IP3 will be commercially available in time for next year's hurricane season.—DAVID KOHN

CAMERA SCIENCE

ACHIEVING PERFECT FOCUS

A Stanford scientist discovers the secret to blur-free photography

PHOTOGRAPHING NIGHTLIFE with his new Nikon a couple years ago, Ren Ng found that most of his pictures were blurry. Like many amateur photographers, he was frustrated: In low light, his camera gave poor depth of field, focusing on figures in the foreground or background but not both. Unlike most shutterbugs, though, he was also a grad student in the computer graphics department at Stanford University, with a background in photographic simulation and an adviser who had won an Oscar for digital animation. For his dissertation, Ng created the first portable camera that can simultaneously capture all depths of field, banishing blurry backgrounds.

The trick is to capture many images at

once—87,616, to be exact—each from a slightly different angle, enough to digitally render the frame in 3-D. With graphics software of his own design, Ng can then synthesize an image on his PC, mixing perspectives to attain precisely the focus he wants.

His setup includes a handheld digital camera and a homemade array of tiny lenses mounted between the main lens and the four-megapixel digital sensor. The array splits one big image into numerous little ones, which his software manipulates after the photo is downloaded to a computer. Ng anticipates a market for his camera in point-and-shoot photography. "But first," he adds, "I have to graduate."—JONATHON KEATS

POINT OF VIEW Ren Ng's camera can simultaneously focus on objects in the foreground (1) and background (2). New software brings them both into focus (3).

