



## NEWS

### ● PRESS RELEASES

#### ● PRESS KITS

#### ● FACT SHEETS

#### ● FEATURES

#### ● PROFILES

#### ● IMAGES / VIDEOS

#### ● MEDIA VISITS

#### ● MEDIA CONTACTS

#### ● EMPLOYEE NEWSPAPER

## 2001 News Releases

### Computer Vision Test Holds Promise for Robotic Eye Doctor November 5, 2001

A five-minute vision test using a laptop computer with a touch-sensitive screen can be used on Earth and in space to help diagnose the onset of eye diseases and even certain types of brain tumors.

With one eye covered, a person sits in front of a computer screen divided into a grid. The subject stares at a central spot on the touch-sensitive screen and, using a finger, outlines missing areas of the grid. The computer records, processes and displays a 3-D image of the subject's visual field. The test for each eye takes about 4 to 5 minutes.



Testing the computer vision test  
[Browse image](#)

"As NASA moves forward to establish a permanent presence in space, this may be considered a breakthrough step for the creation of an autonomous onboard physician," said Dr. Wolfgang Fink, physicist and senior member of the technical staff at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "It is a non-invasive, quick and easy process that gives astronauts and physicians on the ground an almost instant auto-diagnosis. This type of technology will be useful for long-term space missions where early detection and advance monitoring will be key to the health of the astronauts."

Fink, a visiting research assistant professor of ophthalmology at the University of Southern California, Los Angeles, developed the 3-D Computer-Based Threshold Amsler Grid Test as part of his post-doctoral research while at the California Institute of Technology in Pasadena, with his colleague Dr. Alfredo Sadun, Thornton professor of ophthalmology at USC. Caltech manages JPL for NASA.

"This new test is not only more revealing than standard visual field tests, but it is also much quicker and simpler than existing methods. This test may make visiting an ophthalmologist cost-effective, convenient and fast, giving the doctor a tool to do a better job," said Sadun.

This tool has been undergoing testing in clinical trials that began last year at the Doheny Eye Institute, Keck School of Medicine at USC. Trial results show that the screening test helps detect a variety of eye conditions, such as glaucoma and macular degeneration-- the two leading causes of blindness. Early detection of these conditions and

appropriate treatment are crucial in preventing further loss of sight.

Caltech has filed a full patent on the screening test, and several companies have expressed interest in licensing the technology that may become commercially available as early as next year. Future uses envisioned are: monitoring the effects of intracranial pressure elevation in low-gravity environments and evaluation of possible stroke onset and of acute and chronic stroke conditions. Funding for this project was through a grant from the National Science Foundation, Arlington, Va. JPL is the lead U.S. center for robotic exploration of the solar system.

More information is available at: <http://www-aig.jpl.nasa.gov/public/mls/home/wfink/3DVisualFieldTest.htm> .

---

Contacts: JPL/Carolina Martinez (818) 354-9382

[Privacy / Copyright](#)

[FAQ](#)

[Feedback](#)

[Site Map](#)