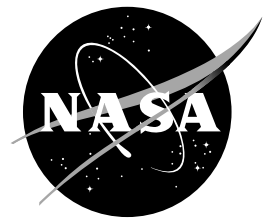


NASA Facts

National Aeronautics and
Space Administration

Marshall Space Flight Center
Huntsville, Alabama 35812



FS-2004-07-88-MSFC

August 2004

Video Image Stabilization and Registration (VISAR)

VISAR, or Video Image Stabilization and Registration, is computer software developed by NASA that improves poor quality video, often producing a clear, sharp image that reveals features that would not otherwise be seen.

The video enhancement software was created at the Marshall Space Flight Center in Huntsville, Ala., by Dr. David Hathaway, a Marshall solar physicist, and Paul Meyer, a Marshall atmospheric scientist, to study violent explosions on the Sun and examine hazardous weather conditions on Earth.

Because VISAR stabilizes horizontal and vertical camera motion, corrects for camera rotation and zoom, smoothes jagged edges of pictorials and reduces fluctuating spots, or "snow," it produces clearer images of shaky, jittery or moving objects. Individual frames in video clips can also be added together to bring out details not otherwise visible in dark, underexposed footage.

Law enforcement

The Federal Bureau of Investigation became the first non-NASA beneficiary of VISAR, when Hathaway and Meyer were asked to analyze video footage of the 1996 Olympic Summer Games bombing in Atlanta, Ga. The two scientists successfully used VISAR to enhance nighttime videotapes made with hand-held camcorders, revealing important details about the bomb and bomber.

The VISAR technology has since been further refined and is now used by police departments nationwide, as well as the FBI, to solve dozens of criminal cases.



Video made with a handheld camcorder (bottom) can result in shaky footage. When enhanced with VISAR software, a clear, sharp image (top) allows the license plate to be read.

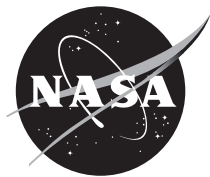


NASA inventors Paul Meyer, left, and Dr. David Hathaway view a license plate number revealed by using the Video Image Stabilization and Registration -- VISAR -- software to improve poor quality footage.

Commercial uses

Video cameras have become common fixtures in our everyday lives. Businesses such as banks, convenience and retail stores, gas stations and office buildings use video systems for business and patron safety. The cameras are mounted obscurely on walls, ceilings, and even on traffic lights to capture the average person on videotape up to eight times a day.

Recognizing the numerous benefits and applications of high-quality surveillance systems, VISAR technology has been made available in the marketplace through NASA's commercial licensing process. One successful licensee is Intergraph Corp., of Huntsville, Ala., which has incorporated VISAR software into the company's Video Analyst workstation. The system, which has been sold to numerous law enforcement agencies, is used with surveillance video, crime scene footage, law enforcement sting operations, and with dash-mounted video cameras. It allows law enforcement officers to enhance and enlarge pictures to reveal clues about crimes.



National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

Military applications

Military users in the U.S. and its allies can use VISAR for security, to stabilize video feed from aircraft, for target identification and confirmation, weapons deployment, and in sophisticated surveillance systems in the intelligence field. With features such as enhancement, image tracking, and the ability to accept sonar data, VISAR can greatly enhance the use of satellite or aerial video, damage assessment, surveillance and reconnaissance, training, and mission debriefing.

Other uses

Additional or broader applications in medical imaging, scientific uses and professional/consumer video editing, for instance, are also possible if other commercial license agreements for VISAR are reached.

For more information about NASA commercial licensing, visit <http://techtran.msfc.nasa.gov/business.html>

VISAR awards

VISAR was named NASA's 2003 Commercial Invention of the Year, and Hathaway and Meyer were among the five finalists in the national Inventor of the Year award. In 2002, Hathaway, Meyer and Sammy Nabors of Marshall's Technology Transfer Department, won the Federal Laboratory Consortium's Excellence in Technology Transfer Award for VISAR. VISAR was inducted into the Space Technology Hall of Fame in 2001.

Spinoffs

NASA has a long history of improving life on Earth with technology developed for the space program by making its inventions and technologies available to American industry. NASA technology touches the lives of Americans everyday, in a variety of ways. More than 1,300 documented NASA technologies have benefited U.S. industry, improved our quality of life and created jobs for Americans.