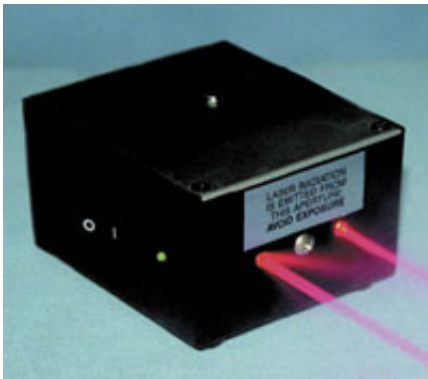


# NASA technology 'shoots' for crime scene investigations

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The Laser Scaling Device attaches directly to a camera and projects a pattern of dots into the field of view. This pattern appears in the photograph along with the image of the object under investigation, enabling the viewer to measure the size of the object. Credit: NASA

What do a NASA engineer and a detective have in common? The answer is a new NASA photographic laser device that helps look for damages on NASA's Space Shuttle that can also be used to "shoot" more details in crime scenes.

Engineers at NASA's Kennedy Space Center (KSC), Kennedy Space Center, Fla., developed the Laser Scaling and Measurement Device for Photographic Images (LSMDPI) to assist scientists who were unable to determine the exact scale of hailstorm damages to the Space Shuttle's external tank by viewing photographs of the spacecraft on its launch pad.

The LSMDPI is a half-pound black box, powered by a single nickel-cadmium battery that attaches directly to a camera's tripod mount. Twin lasers, an inch apart, shoot from the box, and add scale to photographs. In other words, the laser offers the ability for someone to look at these special photographs and have a better understanding of just how big or small objects really are. In the case of the Space Shuttle, engineers are now able to measure the distance from one part of the shuttle to a dent from a hailstorm.

Typically, when you use a camera to zoom in on an object, you lose track of the scale that informs you of an object's actual size. When a picture is taken with the LSMDPI, the image loads into software designed by NASA electrical design engineer Kim Ballard. The user chooses a set of reference points such as a laser pattern of reference point dots that will appear along with the image of the target object. The user also inputs the distance between the reference points. The software then sets the scale based on that distance. This allows the viewer quantifiable perspective on the size of the object. The size of the object's features can then be found and measured by using the computer software to mark the laser points.

"I think that the greatest contribution that the Laser Scaling Measurement software offers to law enforcement is it 'un-cuffs' the investigators hands with digital image evidence by facilitating fast and accurate measurement analysis of anything in a crime scene photo, not just the intended target," said Ballard. "This aspect opens up the possibility for serendipitous evidence detection after the fact that may not have been obvious at the crime scene. For example, the software may be instrumental in attaining dimensions of articles or their proximity locations within a room that were not previously part of the investigation."

As it is useful at NASA, the laser device is very helpful for law

enforcement. Contractor Jeffrey Kohler of ASRC Aerospace, a company that supports NASA's Innovative Partnership Office, and his colleagues did an assessment to review the technology and how it could apply to potential commercial markets. "Forensics was at the top of the list," said Kohler.

Not only can they use it to fully view photos of components from crime scenes such as blood-spatter patterns and graffiti, but can also see the images from different angles (including diagonally, horizontally and vertically) to better analyze and understand the scenes.

In fact, just recently, Ballard was asked by the U.S. Federal Bureau of Investigations (FBI) to add more capabilities to the LSMDPI software to enable forensics experts to zoom in and out of the image to measure blood spatter details across a wall as well as specific areas. At the FBI's request, NASA has also enabled compatibility of the image files with .tiff, .png, .gif, and .bmp files as add-ons to .jpg images.

Armor Holdings, Inc. of Jacksonville, Fla., is a leading manufacturer of crime scene investigation accessories, including the new LSMDPI. They manufacture a variety of instruments used by industries that rely on technology to perform efficient and safe tasks. Through Armor, LSMDPI is not only benefiting crime scene investigations, but also photographers and surveillance personnel. It is also becoming increasingly popular in crime laboratories around the world. Following a recent request from Armor, NASA also included English/Metric units -- millimeters, centimeters, meters, and kilometers -- to support European customers and aerial photography.

Today's crime investigations often rely on the device to scale evidence since its unique laser beams allow viewers to see image components much more clearly than traditional camera images. Similar technology is also useful in oil and chemical tank monitoring and aerial photography.

Source: NASA/Goddard Space Flight Center

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