FROM VIDEO TO PHOTO

ORIGINATING TECHNOLOGY/
NASA CONTRIBUTION

Ever wonder whether a still shot from a home video could
serve as a “picture perfect” photograph worthy of being
framed and proudly displayed on the mantle? Wonder
no more.

A critical imaging code used to enhance video foot-
age taken from spaceborne imaging instruments is now
available within a portable photography tool capable
of producing an optimized, high-resolution image from
multiple video frames.

PARTNERSHIP

RedHawk Vision, Inc., a Costa Mesa, California-based
subsidiary of Irvine Sensors Corporation, developed the
“Real-Time Self-Contained Image-Motion Compensation
for Spaceborne Imaging Instruments” algorithm with
assistance from NASA’s Marshall Space Flight Center
under Phase I (1992) and Phase II (1998) Small Business
Innovation Research (SBIR) contracts. By calculating the
movement of a scene and then repositioning it back to the
original position, the algorithm allows NASA to zoom and
stabilize video footage without loss of detail, extract photo-
quality still images, and even salvage dark, blurry, and jum-
bled video that is otherwise unusable. RedHawk Vision
went on to complete another series of SBIR contracts with
the U.S. Air Force, further advancing the video-to-photo
software in preparation for commercialization.

Released to the public in 2000, RedHawk Vision’s Video
Pics™ was the first product to evolve from the NASA and
U.S. Air Force collaborations. Video Pics demonstrated
the capability to successfully extract 35-millimeter-quality
photographs from continuous video and produce digital
files compatible with image-editing software.

As the millennium progressed, so did digital technology,
prompting RedHawk Vision to create a new line of video-
to-photo software that could convert higher frame-rate video
into optimal image prints.

PRODUCT OUTCOME

The new Paparazzi™ stand-alone video-to-photo processing
software generates clear, high-quality images (300 dots
per inch) from noisy, grainy streaming video, much in the
same way that the human brain “sees” video content: scene
by scene. Paparazzi takes the best parts of multiple frames
of video and overlays them to create an image of superior
quality in less than 10 seconds, unlike a frame-grabber,
which extracts images from only a single video frame and
at a much slower rate. As a result, Paparazzi catches extra
details unattainable when using a frame-grabber, such as
the exact time displayed on a wristwatch being worn by an
individual in motion in a video.

In addition to combining video frames, Paparazzi adjusts
pixel aspect ratio and corrects color. Controls for bright-
ness, contrast, saturation, and hue let users fine-tune light-
ing as they would with any type of photo-editing software.
Other features include zooming and cropping, optimized
black & white processing, noise reduction, and 16:9 video

Stored on a “distribution unit” the size of an index finger,
Paparazzi™ software generates clear, high-quality images from
noisy, grainy streaming video.
support (16:9 is considered the new “standard” for digital television broadcasts).

The Paparazzi software and its supporting files are supplied on a Universal Serial Bus (USB) Flash drive “distribution unit” the size of an index finger, allowing for quick and easy transport of print-ready images between computer systems. To access the software, the user simply plugs the distribution unit into a computer’s powered USB port and double-clicks on the associated icon in the drive’s window. Paparazzi processes all video files that play on personal computers via the Apple QuickTime® downloadable media player.

In 2003, Paparazzi saved the day in a “one off” situation where a wedding photographer failed to make it to the church for a wedding ceremony. Brian Coe, the owner of an events videography firm just outside of Paris, France, named SQYnet Productions, purchased the video-to-photo software in order to supply stills to a “tearful bride” who inquired whether photos could be extracted from her wedding video. With Paparazzi, Coe was able to extract 40 high-quality photos from the video to satisfy the customer’s request. SQYnet Productions has since incorporated Paparazzi images as an option for some of its standard wedding packages, leading to increased revenues for the company. With Paparazzi retailing at $279, Coe is happy to report that the software technology has already paid for itself.

Other applications for the technology include forensics, where crime investigators can use the software to decipher clues potentially caught on nighttime surveillance tapes, as well as astronomy, where astronomers can obtain sharp, distortion-free images with a combination of video recorder and a telescope.

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