Pixon Imaging™

Company Overview

The "go-to" company for high-value real-time video image processing.

CONTRAST ENHANCEMENT • DEHAZING • NOISE REDUCTION • MOTION STABILIZATION • DEWARPING • COMPRESSION

Pixon Imaging develops algorithms and hardware focused on real-time image processing. We are the exclusive licensee of the powerful Pixon® method, a process that enables unparalleled increases in sensitivity and image resolution. Using the Pixon method and other proprietary technologies, we provide leading-edge imaging solutions to military, surveillance, and homeland-security customers. Our goal is to make "Pixon" synonymous with "image enhancement". Simply put, our goal is *Better Vision, Everywhere*.

The Problems

Viewing over long distances at high magnification suffers the effects of image warping and blurring from atmospheric turbulence. Mist, dust, smoke, and haze obscure scenes of interest and add interfering scattered light. Deep shadows and glare hide low-contrast features. Diffraction and low light levels hamper the ability to see clearly. Compressing images for transmission or storage introduces artifacts that degrade quality. Pixon Imaging offers solutions to all of these problems.

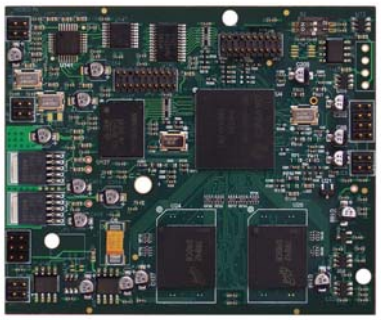
Pixon-method deblurring. When viewing over long distances at high magnification, atmospheric turbulence warps and blurs the image.

The Solutions

We have developed several hardware implementations of our image-enhancement algorithms, with NASA, the US Missile Defense Agency, and the US Army funding several projects. We currently offer rack-mountable, tabletop, and board-level real-time processing units for enhancing standard-definition video.

PX50 Image Processor

Information- and physics-based modeling is the heart and soul of our IP. The Pixon method is the world's best information-based model for identifying essential image information and cleanly separating it from noise and artifacts. This fundamental process of removing the "chaff from the grain" is what gives the Pixon method its unparalleled capability for increasing detectability and resolution. Developed for astronomy, the Pixon method has been used to obtain not only the most sensitive, highest resolution telescopic images, but also the highest resolution microscopic images in the world.



PX40PCB Image Processor, 76mm x 64mm

The concepts behind the Pixon method are deeply rooted in information theory. Because of this, Pixon-method imaging performance achives the theoretical limit of what is possible. In other words, the Pixon method is an ultimate technology that cannot be bettered by other approaches. Its roots are also far-reaching. Not only can the Pixon method be applied to noise reduction and resolution boosting, it can be used to increase the performance of image compression and to provide superior restoration of images compressed with standard techniques.

Our Company

Pixon Imaging is a daughter company of Pixon LLC, now an IP holding company. We are licensed to practice and use the Pixon method for military, security, microscopy, compression, commercial video, and other applications. Pixon Imaging's CEO

The Pixon method cleanly separates signal from noise.

and chief scientist, Dr. Richard Puetter, is the principal developer of the Pixon method and a world expert in image processing. Dr. Chiyoko Lord is Pixon Imaging's COO and vice president of business development, and Mr. Skip Powers is Pixon Imaging's vice president.

PixonImaging has funded its technology development largely through grants. The total investment now amounts to roughly $7M with 22 man-years in software and 12 man-years in hardware. Pixon Imaging has licenses to all of Pixon LLC's patented technologies.

Dehazing (reduces visual effects of mist, fog, dust, smoke, etc.).

Customers

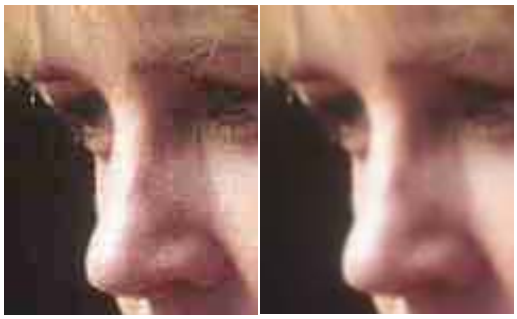
Pixon Imaging (and previously Pixon LLC) clients that have sought our help in achieving the best results with their imaging data include The Aerospace Corporation, TRW, Northrop Grumman, Lockheed Martin, Aeromet, L-3 Communications, Photon Research Associates, SAIC, Southwest Research Institute, The Naval Research Labs, The US Missile Defense Agency, The US Navy, The US Army, The Japan Coast Guard, The National Radio Astronomy Observatories, Health Canada, and The Royal Canadian Mounted Police.

Performance that will be achieved by image-dewarping hardware being developed for the Army.

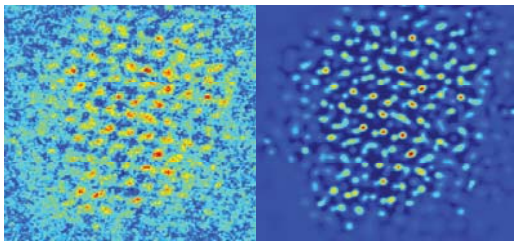
Markets

Our technology has a wide range of applications within the imaging industry. Our hardware is poised for application within the DoD and DHS for use with UAVs, missile defense, tanks, ships, aircraft, handheld systems, and other vision systems. Our software can be applied to security, microscopy, and other high-value images. One new area of development for Pixon processing is improved playback quality of compressed movies and the future development of higher-performance compression standards.

Use of the Pixon Method to achieve sub-pixel resolution (right) with multi-frame imagery or video.



JPEG (left) and Pixon decompression of the same file. Pixon decompression is nearly artifact free. At typical DVD compression levels, the Pixon Method allows five times greater compression.



Electron micrograph (left) of a CdSe nanocrystal showing the individual atoms. In the processed image (right), resolution has been increased to 0.35 Angstroms, four times finer than the microscope diffraction limit.

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