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## InView Technology Corporation Software for Compressive Imaging

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### USER INTERFACE: CompressView™

CompressView™ software is an easy to use interface developed in-house exclusively for use with InView's Compressive Sensing-based cameras. The application is designed to manage camera setup, data capture and processing, and image reconstruction, display and saving. With this interface the user can connect the camera to a network or automatically find any camera already on the network. Once found, the camera is ready to use. Default parameters for acquisition, reconstruction and timing can be easily changed using scroll down menus. The software comes included with every SWIR camera and is an easy to use application compatible with virtually any Windows based PC. CompressView™ also contains the camera's API and is scalable and configurable for the development of application specific software packages.

CompressView™ provides a mix of simple controls and more advanced features for the experienced user, as shown in Fig. 1. InView's image reconstruction software is based on an efficient algorithm for solving a class of compressive sensing problems with Total Variation regularization. It is based on using the augmented Lagrangian method and alternating minimization algorithms to solve subproblems, a method first developed at Rice University [3]. InView has enhanced the basic TVAL algorithm with noise reduction routines that allow the practical application of compressive sensing methods in ordinary indoor and outdoor lighting environments.



Figure 1 – CompressView™ user interface

## ABOUT INVIEW

From the foundational theory of compressive Sensing (developed only within the last decade) researchers at Rice University invented the "Single-pixel camera" architecture that has only one pixel yet constructs detailed images. InView Technology Corporation has licensed this foundational technology from Rice and developed a compressive sensing computational imaging platform that constructs high-resolution images from low-resolution sensors and represents a significant departure from traditional digital cameras. [2] InView's compressive sensing architecture has particularly strong advantages at shortwave infrared wavelengths where InGaAs arrays are very expensive and low resolution. Now protected by 13 issued patents and additional applications, this platform is embodied in the InView210™ camera that produces XGA resolution SWIR cameras from a single InGaAs detector. At 1024 x 768 pixels, XGA represents nearly twice the pixel count of typical SWIR cameras.

InView Technology Corporation is the clear leader in Compressive Sensing Imaging, and continues to enhance its IP portfolio surrounding the implementation of its unique imaging modality. InView welcomes licensing and investment inquiries. Contact us for more information.



*What is  
Compressive  
Sensing*

**US Patents 8,970,740 ; 8,922,688 ; 8,885,073 ; 8,860,835 ; 8,760,542 ; 8,717,551 ;  
8,717,492 ; 8,717,484 ; 8,717,463 ; 8,717,466 ; 8,634,009 ; 8,570,406 ; 8,570,405**

## REFERENCES AND FURTHER READING

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2. James Tidman; Tyler Weston; Donna Hewitt; Matthew A. Herman and Lenore McMackin "**Compact opto-electronic engine for high-speed compressive sensing**", Proc. SPIE 8856, Applications of Digital Image Processing XXXVI, 885616 (September 26, 2013); <http://dx.doi.org/10.1117/12.2024148>
3. Chengbo Li, "An Efficient Algorithm For Total Variation Regularization with Applications to the Single Pixel Camera and Compressive Sensing," Master's Thesis, Rice University, 2009.

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