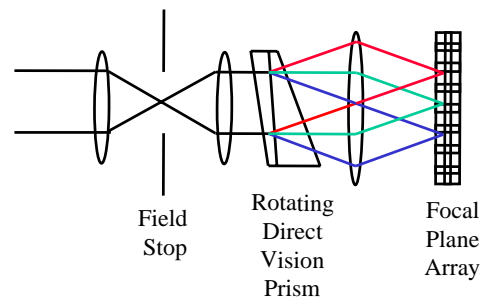
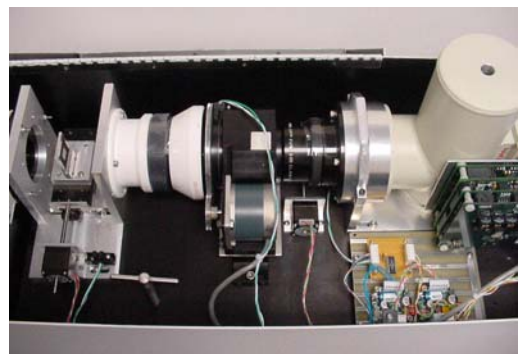


MWIR Hyperspectral Imaging System

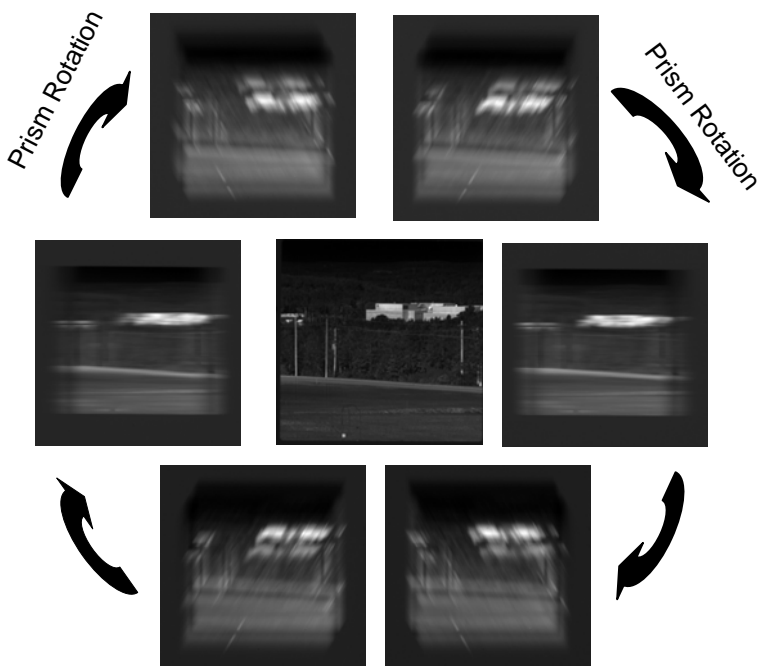
The MWIR ChromoTomographic Hyperspectral Imaging System (CTHIS) is a high-throughput imaging sensor for near real-time hyperspectral applications. The unique combination of direct vision prism and fast-framing camera gives the CTHIS distinct advantages when it comes to recording a hyperspectral image cube (the spectral content of a 2-dimensional scene). Specifically, the sensor operates with nearly 100% optical efficiency, as opposed to other technologies that limit the amount of light entering the system. In addition, pattern noise is minimized, reducing common sources of artifacts in the hyperspectral image. **The result: an efficient, high-throughput, wide dynamic range sensor measuring a hyperspectral image at rates up to 2 Hz!**



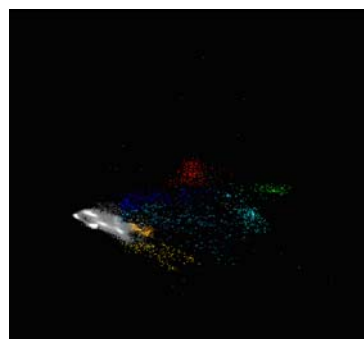
Data

Image Projection Data

Unprocessed sensor output used in image reconstruction. The continuously rotating prism is synchronized with the imager top-of-frame pulse. The reconstruction algorithm is similar to that used in a computed tomography “CAT Scan.”

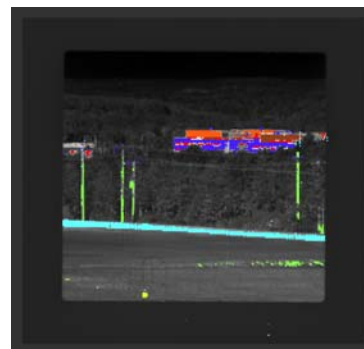


Reconstruction algorithm similar to that used in computed tomography “CAT Scan”.



Scatter Plot

Two dimensional spectral image histogram projected onto second and third principal components.



Eigen-Image

First principal component image with spectral features color-coded in the scatter plot.

Specifications:

- Approximate Size: Height 10" Length: 22" Width: 11"
- Approximate Weight: 35 lbs.
- Spectral range 2.7 – 5.0 μm
- Spectral resolution 100 bands
- Camera frame rate 256 Hz (350 Hz 256 \times 256)
- Array Type InSb
- Format 512 \times 512
- Data dynamic range 14 bits
- Refrigeration Pour Filled Nitrogen Dewar
- Image cube rate: Up to 2/sec

Spectral Imaging Applications:

- Earth resource mapping
 - Crop management
 - Water management
 - Pollution control
 - Mineral exploration
- Military reconnaissance and surveillance
 - Camouflage detection
 - Dynamic battle damage assessment
 - Plume and flash detection/measurement
 - Laser Identification
- Art evaluation
 - Pigment identification
 - Buried detail detection
- Industrial
 - Surface corrosion and aging
 - Plume emission spectra (in image)
 - Water effluent mapping and characterization
- Medical
 - Eye examination
 - Skin condition
 - Melanin variation
 - Surface capillary networks
 - Water content

Advantages:

- Sensitivity at every pixel and every wavelength at every instant
- Efficient use of very large format staring focal plane arrays
- High photon efficiency
- Capable of characterizing point-like transient events
- Robust to FPA nonuniformities

For more information, please contact:

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