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GigE Vision™ Vs. Gigabit Ethernet

GigE Vision compliant cameras
The GigE Vision™ standard is an interface standard for high-performance machine vision cameras that is widely supported in the industrial imaging market. Gigabit Ethernet, on the other hand, is simply the network structure on which GigE Vision is built.

Overseen by the Automated Imaging Association (AIA), the GigE Vision standard ensures that hardware and software from different sources can interoperate over Gigabit Ethernet connections.

Uncompressed data vs compressed data
All Prosilica cameras are GigE Vision compliant and designed to handle the dataflow in dedicated hardware providing uncompressed, very fast and very reliable data throughput in a form that is suitable for computer analysis. Most other types of Ethernet camera are not suited to machine vision because they only supply compressed image data at very limited data rates.

Benefits of GigE Vision
Plug-and-play: No need for special interface cards or expensive/complicated frame grabbers in order to operate a GigE Vision compliant camera.

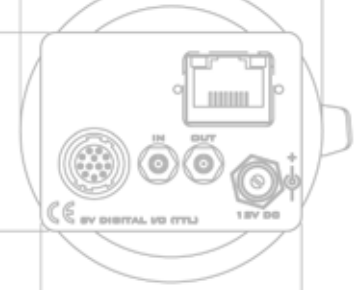
High bandwidth for real-time uncompressed image data transmission: Prosilica's GigE cameras are capable of streaming data at a sustained rate of 125 megabytes per second over their GigE interface - 25% faster than our nearest competitor.

Cable lengths of up to 100 meters (CAT5e or CAT6 Ethernet cables) or more using switches or fiber optics.

Gigabit Ethernet hardware compatible: Allows networking of cameras.

Multicasting: GigE Vision allows multicasting of image data simultaneously to multiple computers for distributing the image processing load across separate computers.

» **View Prosilica's range of GigE Vision™ compliant cameras**
http://www.prosilica.com/products/allmodels.html



Prosilica Cameras Go Airborne

Prosilica GE4900C, GE4000C, GE1910C and GC2450C used in UAV technology

Established in 1949, the Idaho National Laboratory (INL) is a science-based laboratory dedicated to support the U.S. Department of Energy on nuclear & energy research, science and national defense matters.

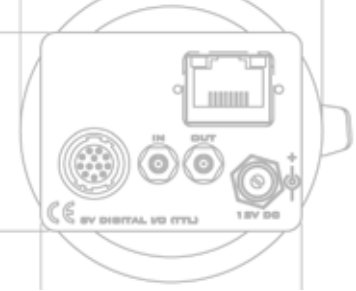
Following a request from the U.S. Air Force, the INL developed a UAV based system, RADAS[1], for rapid airfield damage assessment. These operations are usually conducted by two 3-man teams navigating the field in vehicles and take between 60-90 minutes to complete. Airfield damage assessments take place following a strategic attack on an airfield or upon initial evaluation of an enemy airfield, and therefore may expose key personnel to potentially dangerous situations.

The Rapid Airfield Damage Assessment System

RADAS is a UAV based system capable of capturing multi-megapixel images from an altitude of 245 to 300 meters (800-1,000') and transferring them wirelessly in

[1] Rapid Airfield Damage Assessment System

Mosaic of the airfield - pictures taken by the Prosilica GE4900C



The GE4900C and RaptorEye (left) - The GE4900C in the payload area of the Arcturus UAV (right)

near real-time to a ground base interface where each image is automatically mosaiced into a single geo-referenced map.

Mainly used for military missions but also for civil applications including firefighting, police observation and reconnaissance reports of natural disasters, UAVs (Unmanned Aerial Vehicles) are unpiloted aircraft that are remotely controlled or flown autonomously via pre-programmed flight plans or other more complex automated systems.

RADAS incorporates the 16 Megapixel Prosilica GE4900C camera. The INL chose the GE4900C for its high resolution, excellent image quality, sensor size (35mm) and for its ease of integration thanks to its Prosilica plug-and-play GigE interface. The camera is fitted with a prime 55mm Nikkor lens and is mounted in the payload area of the 3.3 meter (10' 10") wing span Arcturus T15 UAV, looking down to the ground. Image recording is automatically triggered at distance intervals based on the UAV flight plan. Once captured, the image data is transferred to the RaptorEye device onboard the UAV via cat6 cable.

RaptorEye Aerial Imaging System

Developed by Airborne Innovations, the RaptorEye is a high performance UAV solution capable of transmitting multi-megapixel images as well as metadata over a UHF broadband datalink for short missions, or low bandwidth satcom image transmissions systems for "beyond the line of sight" missions. The compact device (117x168x49mm) features a Core 2 duo processor and can provide up to 64GB of onboard image storage and high compression performance capable of supporting real time image downlink of large format images. RaptorEye supports various interfaces including Gigabit Ethernet and works with all 2 to 16 Megapixels Prosilica cameras including the 16 Megapixel GE4900C, the 11 megapixel GE4000C, the ultra-compact 5 Megapixel GC2450C and the 2 Megapixel HD resolution GE1910C.

The RaptorEye is used to trigger the camera, store and prepare images for transmission while recording data such as camera attitude, altitude and position in order to "tag" images with the information. The data is then sent to the UAV ground station via a state-of-the-art wireless network capable of achieving real-time wireless data retrieval of large files.

Close-up shot of the airfield - taken with the GE4900C GigE camera

The flight path and other mission requirements are programmed by ground station engineers into the mission planning software that feeds the autopilot with the data necessary to direct and control the aircraft during the mission.

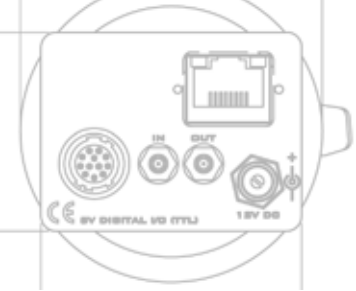
RADAS successfully completed a full demonstration of the system at the Tyndall Air Force Base in Florida in August 2008.

» **For further information:**

Prosilica GE4900C
http://www.prosilica.com/products/ge4900.html

Idaho National Laboratory
http://www.inl.gov

Airborne Innovations RaptorEye Sample Imagery
http://www.airborneinnovations.com/ai/?page_id=94



Ultra-Compact ExView HAD GigE Cameras

The Prosilica GC-Series are a popular range of ultra-compact machine vision cameras with a GigE Vision compliant interface.

The GC-Series count a wide variety of monochrome and color models (from VGA to 5 Megapixel resolution), including three models featuring the Sony ExView HAD CCD sensor technology. The ExView HAD technology drastically improves light efficiency by including near infrared light region. ExView HAD sensors provide high sensitivity, excellent image quality, high quantum efficiency and low noise.

GC660 - Fast VGA resolution camera
The VGA resolution GC660 is a low-cost camera that incorporates the ICX618 ExView HAD sensor and runs 120 frames per second at full 659x493 resolution and even faster with Region of Interest Readout (ROI).

GC1290 - 1.25 Megapixels, 32fps
The GC1290 is an economically priced 1.25 Megapixel camera that runs 32fps at full resolution (1280x960). The GC1290 performs extremely well in applications requiring near megapixel resolution at 32 fps including industrial inspection, machine vision, ophthalmology, aeronautical and aerospace, public security, surveillance, traffic imaging, and OEM applications.

GC1380 - High performance
The 1.4 Megapixel GC1380 is a very sensitive, high performance CCD camera that incorporates the incomparable Sony ICX285 CCD sensor with ExView technology providing low noise, excellent antiblooming and superb image quality. The GC1380 runs 20 frames per second at 1360x1024.

» **For further information**

GC660
http://www.prosilica.com/products/gc660.html

GC1290
http://www.prosilica.com/products/gc1290.html

GC1380
http://www.prosilica.com/products/gc1380.html

GC-Series Features

The GC-Series incorporate an advanced set of camera features including snapshot/ global shutter, pixel binning, area of interest readout, video-type auto-iris support, external trigger and sync I/O, RS-232 peripheral port, exposure, gain and offset controls, non-volatile configuration memory, event recorder capability, pre-trigger recording, programmable strobe functions, multicasting, configurable IP addresses, autoexposure and autowhite balance controls.

The Prosilica GigE sample viewer and the customer-acclaimed SDK are both available free of charge. The SDK supports Windows, MAC OS, Linux and QNX operating systems on both Intel, Power PC and ARM9 platforms. For users that prefer third party imaging libraries and applications, Prosilica's GigE Vision cameras are plug-and-play compatible with software from Matrox, National Instruments, Cognex, Stemmer Imaging, Tordivel, Norpix, MVTec, A&B Software and others.

International Robots & Vision Motion Control Show

9-11th June 2009, Chicago
Booth #706

Prosilica along with sister company Allied Vision Technologies, Inc will be exhibiting their range of GigE and FireWire cameras at the International Robots & Vision Motion Control Show in Chicago.

This year's show will welcome major players in the robotics, motion control and machine vision industries.

Attendees will have the opportunity to see live demonstrations of vision-enabled robots, meet with systems integrators, and get a glimpse of the future at the Emerging Robotics Pavilion.

» **For further information**
http://www.robots-vision-show.info/

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GiGE VISION™

high resolution

GE4900: 16 Megapixel GigE Vision™ camera

Our cameras are designed and manufactured in-house to deliver a more robust and integrated product that meets the highest quality standards. Our products are noted for their high performance, ultra-compact size, light weight, fast frame rates, wide range of resolution, advanced triggering, sophisticated controls, industrial ruggedness, rich set of camera features and extreme versatility.

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