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GC-Series Integrated into Cloud Cap's Tase Gimbal

Prosilica is pleased to announce that its GC-Series have been integrated into the Cloud Cap Technologies' Tase Gimbal.

The Tase Gimbal is a very small, stabilized gimbal ideally suited for single camera tracking applications. The device can be mounted onto UAVs (Unmanned Aerial Vehicles) and used for a wide range of applications including military missions and civil applications such as firefighting, police observation and reconnaissance.

The Tase Gimbal accommodates the full range of GC-Series cameras. The GC-Series are popular ultra-compact machine vision cameras with a GigE Vision compliant interface. The GC-Series currently count 27 monochrome and color models that range from VGA to 5 Megapixel resolution and run fast frame rates up to 120 frames per second at full resolution.

Cloud Cap Technology Inc. was established in 1999 to provide highly integrated software and hardware solutions for the UAV market.

» [For further information](#)

Cloud Cap Technology Tase Gimbal

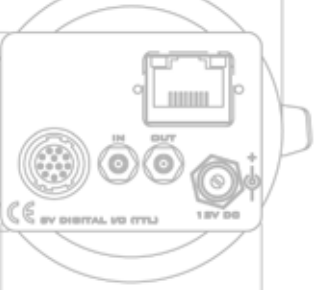
http://www.cloudcaptech.com/gimbal_tase.shtm

Prosilica GC-Series

http://www.prosilica.com/products/gc_series.html



A Cloud Cap Technology Tase Gimbal



Real-Time 3-D Reconstruction with GigE Vision



Striped light patterns reflecting on stationary and moving targets

High speed GigE camera used in Real-time 3-D Structured Light System

The 3-D Imaging Lab at the University of Kentucky's Center for Visualization and Virtual Environments has extensive experience in the area of 3-D and is credited with developing 3-D systems in the fields of machine vision, structured light system and real-time 3-D scanners, biometrics, next generation multimedia, and more.

Real-time 3-D Structured Light System

In 2006, the University of Kentucky received a grant from the US Department of Homeland and Security to develop a method of range sensing for 3-D surveillance cameras.

The resulting product is a high-resolution, real-time 3-D system that employs Structured Light Illumination (SLI) as well as high-speed reconstruction methods to form 3-D images. Structured Light

Illumination is the process of projecting a series of striped line patterns so that, viewed from a certain angle, a digital camera can reconstruct a 3-D model of an object's surface based on the line distortions that occur on this object.

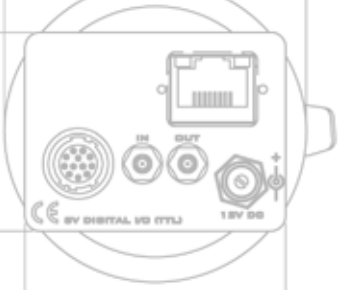
The system consists of a high speed Prosilica VGA resolution camera with Gigabit Ethernet output and a projector. The camera was chosen for its fast frame rates (up to 200 fps at full 640 x 480

1, 2 and 5 - The Real-Time 3-D Structured Light System with a Prosilica high speed camera viewed from different angles.

3 - Striped light patterns reflecting on a target object

4 - Real-time 3-D screenshot of a reconstructed moving target





resolution) and plug-and-play attributes. A monochrome camera is preferred to a color model for this application as the use of color would impact on the system's performance since some colors would not be able to reflect on others (e.g. red on green). The projector is composed of a Texas Instrument Discovery 1100 board with ALP-1 controller and LED-OM with 225 ANSI lumens.

The camera is fitted with a Tamron 16mm lens and mounted below the projector. The camera and projector are separated by 10° for optimum area scanning results, and synchronized to operate at 120 frames per second at 640 x 480 resolution using an external triggering circuit. The projected light patterns are loaded directly into the ALP board's memory.

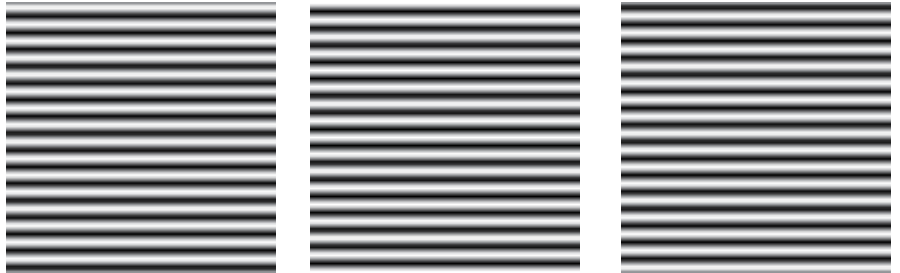
The system is connected to a Dell Optiplex 960 with an Intel Core 2 Duo Quad Q9650 processor running at 3.0 GHz via CAT-5e cable.

The system is fully scalable and the camera optics, projector light brightness and viewing angle can be easily changed to adapt to a larger scale application.

Real-time 3-D point clouds reconstruction at 120fps

SLI Pattern Strategies

The system uses a range of 3 to 6 different alternating linear patterns depending on the conditions (i.e. moving or stationary object). Each pattern contains 16 pairs of black and white stripes (periods) that are projected on



A sequence of shifting striped light patterns used in the 3-D real-time system

to the target(s) in a pre-determined sequence of flashes at 120fps.

The University of Kentucky developed three new pattern strategies to ensure the quality and accuracy of the 3-D reconstruction: A Period Coded Phase Measuring and a Dual Frequency Phase Multiplexing pattern that unwrap the high frequency phase without projecting more patterns or using complicated spatial unwrapping methods, and an Edge Pattern Strategy that increases the signal to noise ratio of the system.

High Speed Reconstruction

While other systems generate 3-D point clouds on a pixel by pixel basis using an inverted 4x4 matrix, the 3-D Imaging Lab has developed new look-up tables that replace the repetitive and constraining matrix process and allow the system to decode the phase video at the full 640 x 480 resolution and 120 frames per second rate. No recording or post-processing is used.

The 3-D point reconstruction technique is applicable to all triangulation-based 3-D techniques including SLI, stereo vision, laser scan, etc.

The 3-D reconstruction software was developed in Microsoft Visual Studio 2005 with managed C++ using the Prosilica Software Development Kit.

Looking ahead

The University of Kentucky's real-time 3-D Structured Light System is fully scalable and can be adapted to perform in applications in the areas of human computer interfacing, biometrics and security, motion scanning and tracking, hand gesture, facial recognition, fast 3-D modeling, and next generation multimedia.

The system is available for licensing for use in commercial products. For further information, please contact Dr. Daniel Lau, email: dllau@engr.uky.edu.

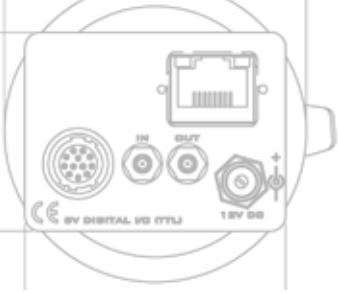
» For further information

University of Kentucky 3-D Imaging Lab

<http://vis.uky.edu/~realtime3d/>

Prosilica High Speed Cameras

Please refer to page 5 of this newsletter



Prosilica High Speed GigE Cameras

Prosilica offers a variety of high performance high speed cameras with a Gigabit Ethernet output that are ideal for applications such as high-speed inspection, machine vision, optical character recognition, traffic imaging, robotics, OEM applications and more.

GE680: 200 fps, VGA resolution

The GE680 is a high performance machine vision camera that runs 200 frames per second at full VGA resolution (680x480) and even faster using Area of Interest Readout (AOI).

This compact camera features the 1/3" Kodak KAI-0340D CCD sensor that offers high speed and good sensitivity.

The GE680 is available in monochrome and color (GE680C) models.



GE680

GC660: 120 fps, VGA resolution

The GC660 is a very compact GigE camera that incorporates a Sony ExView HAD CCD sensor that has particularly high quantum efficiency and excellent NIR response for excellent image quality and sensitivity.

The GC660 runs 120 fps at full 659x493 resolution.

The same sensor and specifications also feature in the GS660 (periscope type camera) and GB660 (board-level camera) models.

GC650: 90 fps, VGA resolution

Capable of running 90 frames per second, the Prosilica GC650 features the 1/3" CCD progressive scan Sony ICX424 sensor for excellent image quality and sensitivity.

This sensor is also available in the GS650 (periscope type camera) and GB650 (board-level camera).



GC650 and 660

» For further information

GE680

<http://www.prosilica.com/products/ge680.html>

GC660

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GC650

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GS660

<http://www.prosilica.com/products/gs660.html>

GB660

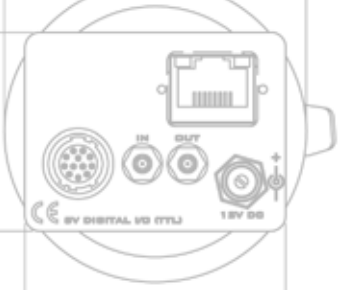
<http://www.prosilica.com/products/gb660.html>

GS650

<http://www.prosilica.com/products/gs650.html>

GB650

<http://www.prosilica.com/products/gb650.html>



Vision 2009

Stuttgart, 3-5 November 2009

Allied Vision Technologies (AVT) will present the latest AVT & Prosilica products at Vision 2009 in Stuttgart.

AVT will be unveiling the Prosilica GX-Series cameras, a new range of GigE Vision cameras that run 240 MB/s using Link Aggregation (LAG) over a Gigabit Ethernet interface.

» For further information

<http://www.messe-stuttgart.de/cms/index.php?id=57146&L=1>



The Allied Vision Technologies booth at Vision 2008

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Prosilica Inc.

101 - 3750 North Fraser Way
Burnaby, BC
V5J 5E9
Canada
Tel: +1 604.875.8855
Fax: +1 604.875.8856

Editor: Laurette Perrard

sales@prosilica.com
support@prosilica.com

www.prosilica.com