

InfiniVision

Dynamic Multi-Camera Frame Grabbing and Processing System



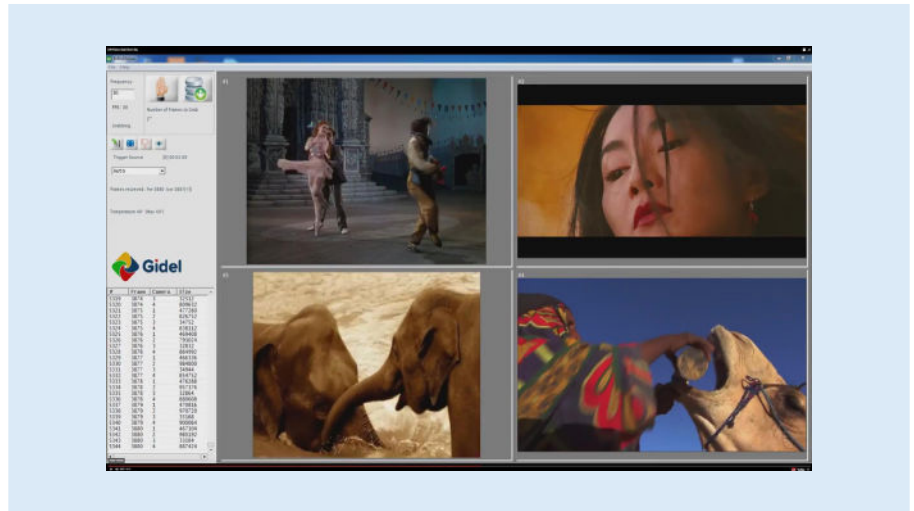
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Key Features

- Available across all Gidel frame grabber systems
- Integrated with the Gidel Grabber SDK suite
- Support for CoaXPress, GigE Vision, Camera Link and MIPI.
- Grabbing and synchronizing from 100+ cameras
- High-speed recording of compressed or uncompressed streams
- Handles dynamic frame sizes and varying incoming data formats
- Handles >100,000 FPS uncompressed image streams
- Acquisition rate of up to 800 Gb/s
- Up to 16 GB image frame buffer
- Powerful image processing capabilities on Altera FPGA devices
- Extensible through the ProcVision suite for custom FPGA logic
- Option for adding inline Image Signal Processing and image compression
- Support for GenICam GenTL and MVTec's HALCON machine vision software
- Ability to tailor to any camera interface and protocol

Target Applications

- Broadcasting and Video
- Augmented Reality
- Video and Audio Compression
- Smart Cities
- Surveillance
- Sorting Machines



The Gidel InfiniVision™ provides flexible infrastructure for acquisition and processing from multi-cameras/sensors simultaneously. The system can capture data streams of varying frame data size as well as to synchronize between 100+ cameras/sensors. Camera interfaces currently offered by Gidel include CoaXPress, GigE Vision, Camera Link and MIPI as well as an option for customization of the camera/sensor interface and protocol. The acquisition path enables adding data processing blocks such as ISP (Image Signal Processing) and compression.

InfiniVision can capture multiple image streams in two ways:

1. From many cameras examining a single scenario.
2. From a single camera capturing images of a single scenario at varying angles.

In both cases, InfiniVision enables building a full coherent image based on multiple synchronized images. The synchronization mechanism automatically re-synchronizes data streams that may have been momentarily interrupted.

InfiniVision's ability to grab on-the-fly any incoming data size adds another dimension of flexibility enabling Imaging applications to combine images of various sizes arriving, for example, from different camera types or from selective ROIs of variable sizes.



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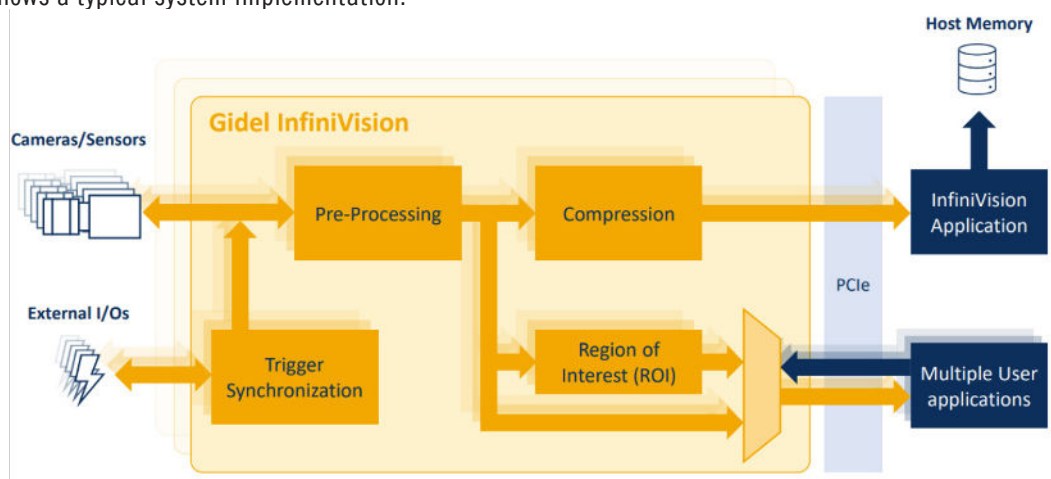
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FEATURE	SPECIFICATIONS
Supported Hardware	PCIe board, FPGA module or Jetson Frame Grabber System
Acquisition Rate	Up to 800 Gb/s with a single hardware unit
Cameras Supported	CoaXPress, Camera Link, MIPI6 and option for tailoring to any camera interface/protocol
Pixel Formats Supported	Mono, Bayer, RGBA (8, 10, 12, 14 and 16 bits/color) and RGB (8, 10 and 12 bits/color).
Trigger Synchronization	100+ cameras
Connectors	SDR26 (for Camera Link) DIN 1.0/2.3 (for CoaXPress) MIPI CSI-2 (for MIPI6) VGA15-pin (for GPIO) Option for custom connector
FPGA	Altera Arria 10

FEATURE	SPECIFICATIONS
GPIO	RS422, opto-coupler, LVTTTL and 30V at 0.9A
Software and Ecosystem Support	- API suite and examples. - ProcWizard Development tool for efficient FPGA development - Option for evaluation and simulation using the Gidel CamSim camera simulator - Support for GenICam GenTL and MVTec's Halcon machine vision software
Customization Options	- camera/sensor interface and protocol - Image Signal Processing on FPGA - On-FPGA image compression - Option for Gidel to perform the customization according to user specifications

The Gidel InfiniVision system consists of an FPGA board, firmware, camera interfaces, PCIe interface, GUI Application and API library. The following figure shows a typical system implementation.



InfiniVision System Block Diagram

The InfiniVision acquisition path is from the source cameras to the Gidel Board that pre-processes, compresses (optional) and finally merges the multi-camera image streams into a FIFO buffer. The data is then offloaded via the PCIe interface to an external host application. For simulation or evaluation purposes, the Gidel CamSim can be used to simulate the cameras. The InfiniVision or a User application based on Gidel's API configures and controls the system, implements the host post-processing and displays the grabbed image streams.