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Viper-Digital

The Next Generation of Intelligent Frame Grabbers

ACQUISITION FEATURES

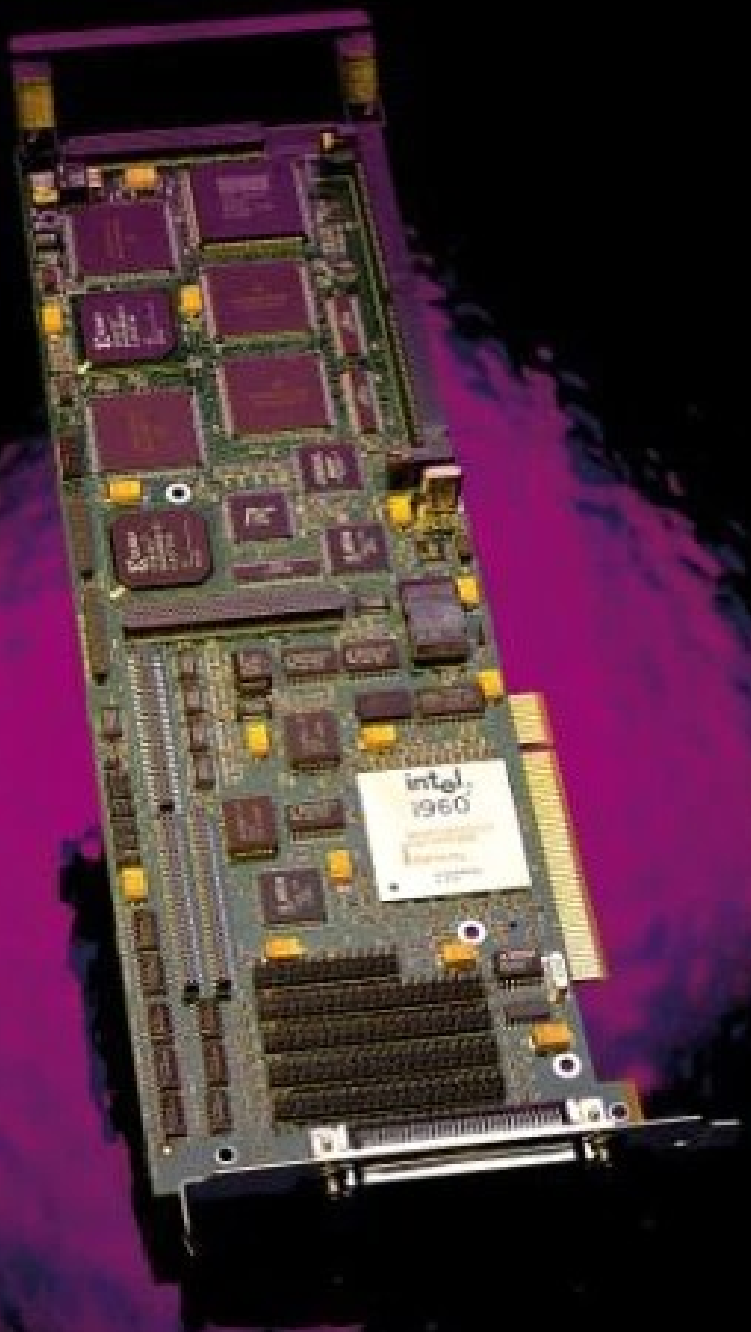
- Interfaces to multi-tap area scan and line scan cameras
- Acquisition rates up to 160 Mbytes/sec
- Two 32 bit input channels interface to multi-tap cameras
- Eight 8-bit inputs permit acquisition from multiple cameras
- Multiple data formats (8, 16, 24 or 32-bit)
- Flat field correction for line and area scan cameras
- Real-time tap reversal
- Trigger input, strobe output, digital I/O
- Data transfer direct to host, or the Cobra/C6 or Python/C6

HOST INTERFACE FEATURES

- i960 System Controller
- PCI Bus Master supports scatter/gather transfers
- Planar or Packed pixel transfer modes
- 100 Mbytes/sec PCI bandwidth
- Local memory storage buffers image data during heavy PCI bus traffic

PROCESSING OPTIONS

- 200 MBytes/sec optional Pixel Processor module performs image pre-processing



CORECO

Viper-Digital

OVERVIEW

The Viper-Digital is a single slot, high quality video acquisition and pre-processing board for the PCI bus that features high speed image acquisition (up to 160 Mbytes/sec). The Viper-Digital can acquire, pre process and transfer images in real-time to system memory, the Cobra/C6 or the Python/C6, as well as handle a variety of data formats including 8, 16, 24 or 32 bits/pixel.

THE i960:
PCI Interface and System Controller

The Viper-Digital utilizes the Intel i960 as its PCI interface. This intelligent I/O controller supports PCI bus mastering and scatter/gather for maximum PCI performance. Additionally, images can be buffered during busy cycles on the PCI bus, ensuring no image data is ever lost.

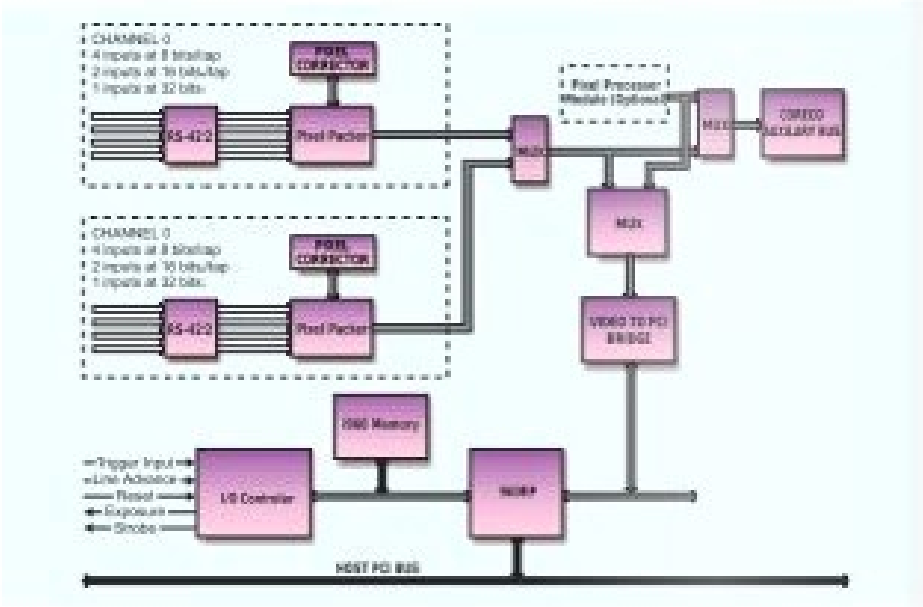


Figure 1: Viper-Digital Block Diagram

HIGH SPEED MUTLI-TAP ACQUISITION

The Viper-Digital acquires digital data at rates up to 160 Mbytes/sec from multiple tap cameras. The board features two, 32-bit wide input channels. Each channel can be configured to acquire data at 8, 16, 24 or 32 bits/pixel. The maximum acquisition rate on any single input is 40 MHz.

Variable Acquisition Resolution

Resolutions from 32 x 32 to 64K x 64K allow windowed or full frame acquisition from either standard or high resolution large array CCD cameras. Variable frame rate capability allows data to be captured from high or slow frame rate cameras, capturing image data for later analysis and viewing. The Viper-Digital is programmable, allowing a range of pixel clocks, vertical refresh rates, horizontal line rates and scan types to be acquired by the card.

Tap Reversal

The Viper-Digital is able to reverse the order of data being acquired from each independent tap (and can also be used to reverse an entire image). This is useful in multi-tap cameras where the data is read in reverse from the sensor.

Flat Field Correction

The Viper-Digital is able to perform flat field correction on line scan data. This feature is used to compensate for lighting variations and/or sensor variations across the field of view. Flat field correction occurs during acquisition.

THE PIXEL PROCESSOR MODULE

The Pixel Processor is an optional processing module designed for the Viper series of products and the Cobra/C6. The Pixel Processor performs point-to-point and neighbourhood operations on live images up to 200 Mbytes/sec. Reference images can be acquired and stored in the Pixel Processors on-board frame buffer for further operations.

The Pixel Processor features a re-programmable processing unit, plus frame buffer memory which is used to buffer reference images, incoming images and intermediate results. The Pixel Processor operates on pixels at rates up to 200 Mbytes/sec.

Image Analysis Software

The VIPER-Digital supports WiT, a robust software package for imaging application development. The first visual programming package to combine multiple Pentium execution with MMX-based image processing operators, WiT 5.2 features a multi-threaded scheduler to drive execution on dual or quad Pentium systems using igraphs created in a CAD-like user interface.

A pro-toolkit option provides run-time development support. A fast, cost-effective and proven OEM solution, WiT includes over 300 operators for image processing and analysis and is ideal for machine vision, biomedical analysis and laboratory research applications.



Viper-Series

The Viper series are the next generation of intelligent frame grabbers featuring image pre-processing. Other boards in this family include: **Viper-Quad** (mono-chrome camera interface) and **Viper-RGB** (RGB camera interface). The Vipers can be used as acquisition devices for host based processing or as acquisition devices for embedded processing on the Cobra/C6 and Python/C6.



Viper-RGB: Frame grabber that digitizes video from virtually any area scan or line scan camera source

APPLICATIONS

- Real-time imaging applications
- Multi-tap camera interface
- High resolution image processing
- Color image processing
- Front-end pre-processor for the Cobra/C6 and Python/C6

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