High Performance Imaging

Datacube was founded on the idea that advancing silicon technologies would provide breakthroughs in price and performance for exceptionally fast, highly-precise manipulation of images — enabling performance of a wide range of inspection and visualization tasks. Datacube quickly became the world's leading supplier of sophisticated image processing hardware by continually introducing more powerful and cost-effective image processing tools. Over the past two decades, Datacube's staff has grown to include expertise in all aspects of high performance image processing, available to assist customers at all stages of application development.

Today, Datacube continues to make image processing technology accessible to application developers in a wide variety of markets, offering the widest selection of high performance imaging products available — including fourth-generation pipeline processors, advanced software tools, a family of digital image recorders, and display controllers. Providing system designers with highly integrated, exceptionally reliable, single-vendor imaging solutions, Datacube minimizes the time and cost required to develop successful applications.

Technology

Once the domain of a narrow community of users, high-speed, highly-precise image processing has become a practical tool in many exciting areas including remote sensing, automated inspection of continuous and discrete products, medical imaging, and semiconductor fabrication. Datacube's pipeline processing image technology makes this possible.

Pipeline processing uses a collection of specialized computational elements, many developed by Datacube. In the pipeline processing architecture, a stream of video data is piped through a configurable series of sequentially connected elements, which produces a continuous stream of processed image data. The sequential nature of pipeline processing makes it possible to handle the huge volume of pixel data produced by high frame-rate applications in real-time. Multiple parallel pipelines

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may work synchronously to provide even greater data throughput.

Applications

Traditional markets for high performance image processing technologies include the research and defense communities. Enhancement of satellite images, target tracking, multi-spectral processing, and other R&D/defense applications are technically complex and demanding. Datacube's leadership in high performance imaging gives the company a long-standing and continuing presence in this area. But Datacube is experiencing growth and providing expertise in newer markets as well.

Machine Vision. Meeting the growing demand for uncompromising quality in manufactured goods requires automated systems that perform inspection and measurement operations with high speed and accuracy. Datacube products have been widely used by OEMs in these applications for many years. Datacube's Machine Vision Group now offers the MaxVision

Toolkit to shorten and simplify the application development process on MaxVideo hardware including the *mvPower*, Datacube's stand-alone VME-based image processor with an embedded CPU.

Web Inspection. The pressure to comply with international quality standards like ISO 9001 has created demand for grading and 100% inspection of continuous process materials such as foils, papers, fabrics, and plastics. Datacube's Web Inspection Group meets this challenge with Black Widow — an inspection system with the power to process and analyze vast amounts of data collected by sensors positioned over materials moving at high speeds.

Medical Imaging. The demand for medical image enhancement and storage products is growing rapidly. Datacube's high performance technology is ideal for these challenging applications. Datacube Medical Imaging's coreDAP products provide OEMs with tools for processing high-

- Industry leader in high performance imaging for almost two decades
- Image processing hardware, software, development tools, and systems to meet every application need

- Sales offices and distributors located worldwide
- Technical training courses in image processing available for all experience levels

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resolution, high frame-rate digital X-rays, and products that facilitate efficient networking, storage, and retrieval of image data.

VME-based Image Processing Hardware and Software

The state-of-the-art MaxVideo 250 is Datacube's fourth-generation, board-level image processing system. The MaxVideo 250 has all the hardware necessary to digitize, process, store, and display images, on a single-slot VMEbus card. Each MaxVideo 250 can be equipped with a module to acquire analog, digital, or color images. It interfaces with a variety of sensors, including line scan, TDI, multi-tap, and multi-spectral cameras, at a variety of speeds and resolutions.

Datacube's selection of specialized storage, display, and processing devices includes the MD1 family of digital image recorders. The MD1 is a lossless digital storage subsystem designed to be integrated with any of Datacube's MaxVideo 250 or MaxVideo 200 image processors, providing a storage solution for every application.

The XI Display Controller was developed by Datacube to complement the display capabilities of the MaxVideo image processors. It makes it possible to display image processing results in a window within an X-windows environment, eliminating the need for a second monitor.

Some of Datacube's other specialized processors include devices such as the APA512+ feature extraction processor and the Max860 programmable vector processor. Each device is designed for a specific element of image processing and is easily integrated with the MaxVideo family of image processors.

ImageFlow is Datacube's library of C-callable functions that configures and manages data transfers and processing elements on Datacube's family of MaxVideo pipeline processing devices. It accomplishes this task with minimal overhead, achieving near-register-level performance without painstaking effort on the part of the programmer. It significantly simplifies pipeline processing control by handling complex synchronization and timing issues. ImageFlow is proven and robust, having been continuously improved through more than five years of development, field testing, and user feedback.

VME-based Systems

Datacube offers several types of integrated systems of image processing hardware and software to speed and simplify application development. Each of the following systems is available in a variety of configurations, including fully featured development systems as well as scaled-back, lower-cost target systems for application deployment.

Datacube's PowerTD workstations combine the powerful LynxOS and Datacube's proven image processing hardware and software with Motorola's PowerPC platform for faster processing speeds at lower costs.

MaxTD workstations combine a 68040-based host CPU and the highly deterministic real-time LynxOS with Datacube's image processing hardware and software.

The MaxSPARC workstation is a fully integrated imaging computer ready for development of advanced image processing applications on the industry standard Solaris OS.

PC-based Image Processing Solutions

MaxPCI is a high-powered, single-slot image processing subsystem for PCI bus-based PC platforms. It includes a new generation of acquisition modules (MaxACQ) and processing and storage modules (PSMODs) to provide exceptional flexibility.

MaxPCI workstations combine the power of ImageFlow and Datacube's image processing technology with the widely used WindowsNT operating system and user interface to set a new standard for PC-based image processing.

Services

Datacube offers technical support to customers on several levels. Every product comes with at least a one year warranty for service and repairs. Datacube also maintains a staff of Field Application Engineers (FAEs) who may be dispatched to assist customers at their place of business.

The Technical Training Group at Datacube offers a variety of customer training courses. From an introduction to image processing to advanced operation of a particular product, there is something for everyone.

Commitment to the Customer

Datacube provides image processing hardware, software, and systems to meet the evolving technological and business requirements of a wide range of scientific and commercial users. Datacube is a primary supplier to Fortune 100 firms and major research laboratories worldwide, and continues to develop innovative, cutting-edge products that capitalize on our imaging technology leadership.

In March, 1996, Datacube became certified in ISO 9001, an international standard for quality product design, development, and manufacturing. The checks and balances introduced as a result of following ISO-compliant procedures assure our customers of high-quality products and services.

With regional sales offices located across the U.S. and in England, and partnerships with distributors around the globe, Datacube is wherever you need us to be. For over fifteen years, Datacube has led the way in image processing, providing price/performance breakthroughs that enable practical utilization for a growing number of new application areas. Through ongoing research, input from our broad base of customers, and a commitment to quality, Datacube will continue to be the leader in high performance imaging.

Additional Information

For more information and a complete listing of our high performance imaging products, call us at 978-777-4200, send us a fax at 978-777-3117, or contact us by email at info@datacube.com.
You can also visit our website:
http://www.datacube.com

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