NEXT GENERATION FRAME GRABBERS

Recently, notebook computers are increasing becoming more portable, powerful and able to compete with desktop units as the main computer for a wide range of application. Using this power and the Cardbus and Express Card (both 34mm and 54 mm) standards which allow third party interfaces to the new generation of notebook computers has led to the increasing feasibility of using laptops in machine vision applications. These trends have motivated Alacron, Inc., to produce a complete line of both Cardbus and Express Card frame grabbers that interface to camera link, digital and analog cameras to notebook computers. These products are shown below.

Alacron's FF-CB Cardbus form-factor frame grabber for laptops

Alacron's 54mm and 34 mm FF-XB Express Card format notebook frame grabbers

As noted above, these cards enable a full speed functioning interfaces of most cameras to a notebook computer. The Cardbus standard allows between 100 and 120 MB/sec transfers from the frame grabber to the notebook memory and the Express card standard allows PCI-eX1 transfer rates (approx 256 MB/sec) into the notebook memory. With newer laptops allowing approximately 50-60 MB/sec disk write speed from the add-in slot, many applications become feasible for laptops.

Although there are many OEM applications where these laptop frame grabbers have been adopted, Sensata Technologies. (www. Sensata.com) has implemented a camera application development system using the FF-CB card from Alacron as a frame grabber/recording system for their RapidView™ development system. RapidView™ is a hardware and software platform to develop automotive vision applications for production-level vision sensors enabling solutions like driver drowsiness detection, lane departure warning, collision avoidance, traffic detection and other safety applications requiring "classification". Sensata's current vision products include solar/twilight/tunnel sensors, enabling climate control and automated headlight control and steering encoders for use in electronic stability control systems. The outline of the RapidView™ development system is diagrammed below.

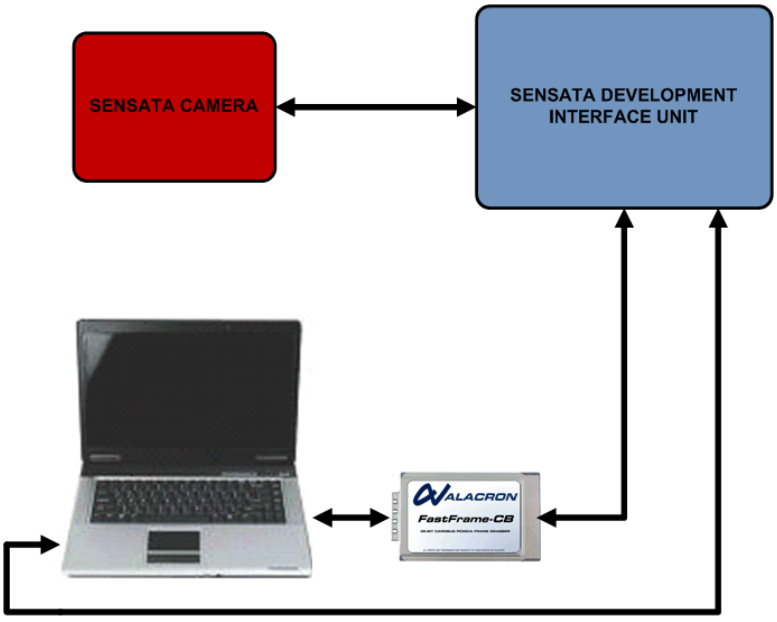

Diagram of the RapidView™ Development System

High speed video is conveyed to the notebook via a parallel LVDS interface through the Alacron FF-CB. The high speed data is processed and displayed by a host application running on the laptop, which provides an easy to use rich and robust collecting of tools for evaluation, and study of video. The FF-CB provides a record and playback capability, for what-if evaluation of processing algorithms and processing IP from Sensata.

To conclude Alacron's notebook frame grabbers provide a wide range of camera interface which allow many applications to be hosted on notebook with the resulting ease of use inherent in a laptop environment.