DART
Embedded Target Tracking Software

Tracking a jet-ski using IR video

Key Features

- Multiple object detection and tracking
- Centroid & edge measurement
- Feature based correlation algorithm
- Moving object detection
- Adaptive background removal
- Automatic coast
- Grey level invariant algorithms
- Robust clutter rejection
- Tracked object position reporting (option)
- Image Stabilization (option)
- Moving target detection (option)

Note: Some features above are operating hardware dependent

Interfacing

- Digital HD and SD or analog (NTSC, PAL) video input
- RS-2332 / RS4-22 for communication with the Pan & Tilt platform
- PAL/NTSC and/or VGA/DVI video out with overlay symbology
- System control via joystick / touch screen / keyboard
- Compatible with Linux and Windows operating systems

Additional GRIP-VMS features

- Panoramic display
- Electronic image stabilization
- Image enhancement
- Digital video recording & playback
- Streaming of SD & HD video

Applications

- Security and surveillance
- UAV & UGV
- Manned vehicles
- Automated video analysis
- Laser based Directed Energy Systems
- Test range TSPI

Video Detection & Tracking

The Vision4ce DART (Detection & Acquisition, with Robust Tracking) target tracking product is an embedded software based tracker that can use either a Linux or Windows based system for video tracking and image processing applications.

A video tracker analyzes video image sequences from a sensor system (one or more cameras), mounted on a servo controlled pedestal (platform) to keep the camera pointing at the nominated person or object. In this context a Tracker has two primary processing functions.

- Detecting and locating objects of interest in the video image (object location).
- Controlling the platform (Pan and Tilt) position and rate such that the camera follows the designated object (Pan and Tilt Control).

DART is able to provide the user with these functions as components within the GRIP-VMS modular video management system or as a stand-alone application.
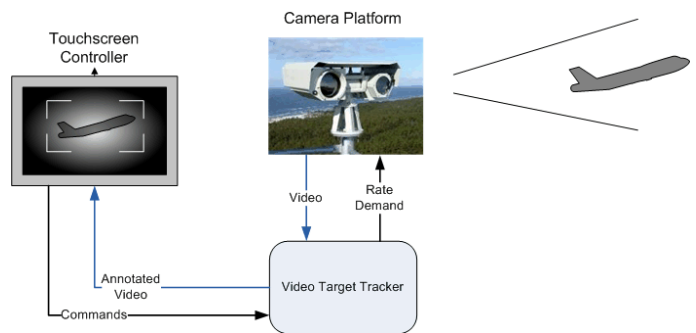
The application is able to run on a commercial desktop or laptop PC, the improved speed and commercial availability of multicore CPUs make an off-the shelf, embedded software tracking platform increasingly powerful and achievable. For OEM customers we can also offer custom solutions tailored for specific or non-standard hardware platforms.

Existing hardware based tracking systems are in general highly proprietary and expensive to adapt to meet a particular tracking requirement. In contrast Vision4ce's DART software based tracker allows for rapid implementation of new and different tracking algorithms offering advanced functionality and low research and development costs.

The software's architecture can also take advantage of commercially available peripherals (e.g., touch screen monitors, joystick controllers, SMPTE 292M, CoaXPress, Camera Link image frame grabber cards, etc.).

DART is resolution and frame rate agnostic so can work with high resolution and high framing rates for applications such as Laser based Directed Energy systems which require high bandwidth tracking of up to 500Hz and beyond

GRIP Hardware

DART is fully compatible with the Vision4ce GRIP rugged PCs and CHARM embedded processors, enabling a complete, low cost, detection and tracking system to be implemented using COTS hardware.