Laboratory Course n° 5
–
Moving Object Imaging

Objective

Study an imaging solution to analyze moving objects. Understand specific features of the system.

Equipment

- PC Computer
- Frame Grabber : DALSA XCELERA-CL LX1
- Digital Camera: DALSA S2-1X-02K40
- 50 mm Lens: PENTAX YF5028A-02
- Video Cables
- 12V Power Supply
- Moving Industrial Parts
- Signal Generator
- Oscilloscope

Software

- CamExpert – TELEDYNE DALSA

Documentation

- User Manual & Brochure for camera & frame grabber
- Lectures on Machine Vision

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Camera setting

In order to carry out this step, consult the following documentation:

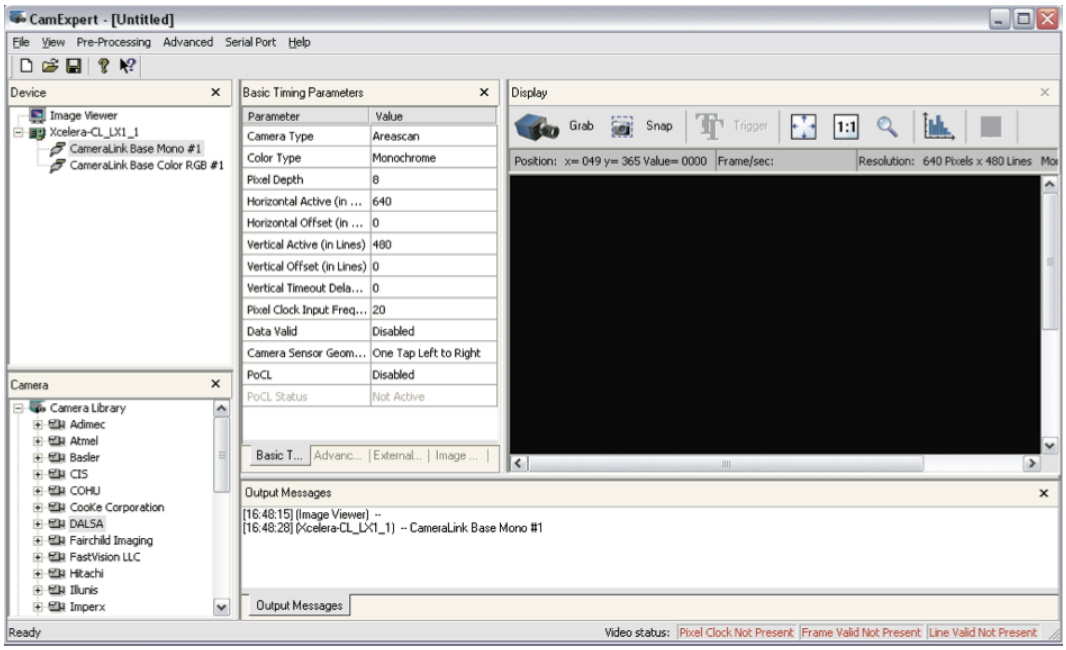
- DALSA Camera & Frame Grabber Brochure
- Lectures on Machine Vision

Switch on the backlight lighting and the moving industrial part motor.

!!! BE CAREFUL WITH MOVING PART !!!

Grab Images

- Start "CamExpert" Software. CamExpert is the camera interfacing tool for frame grabber boards



- Select configuration file for the camera
- Adjust camera settings to obtain a satisfactory image

Start grabbing images and ask professor to validate once everything is OK.

Study camera features: sensor, resolution, video signal …

Study applications of this type of camera

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Camera triggering by external signal

In order to carry out this step, consult the following documentation:

- DALSA Camera & Frame Grabber Brochure

!!! ASK PROFESSOR TO VALIDATE YOUR SETUP BEFORE SENDING EXTERNAL SIGNAL TO THE CAMERA !!!

1 - Connect signal generator to the oscilloscope and adjust the external signal provided by the generator in order to trigger the camera.

2 - Connect cables of the camera, frame grabber, signal generator, and oscilloscope in order to trigger the camera by an external signal provided by the generator.

- Start "CamExpert" Software.
- Adjust configuration settings to obtain a triggered image acquisition
- Adjust acquisition frame rate to obtain adapted images of the moving objects. Analyze frame rate modification w/r to the trigger signal frequency

Start grabbing images and ask professor to validate once everything is OK.

Study applications of this type of configuration