Scorpion 3D SmartCam™

Fully integrated solution

The fully integrated machine vision solution, consists of a SmartCamera from Sony and Scorpion Vision Software® with the latest 3D Vision algorithms. Optional GigE camera from Sony can be added to implement true stereo-vision or smartcam multicamera solutions. The 3D SmartCamera is a natural advance when 2D processing is insufficient to solve the machine vision challenge.

Scorpion Vision Software 3D

Scorpion Vision Software 3D creates the most advanced, accurate and reliable real-time 3D position data in vision applications. Tilted and stacked parts are automatically handled with sub-pixel accuracy. Products variants are handled with automatic recipe switch.
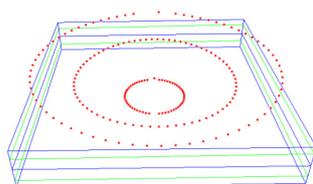

3D Stereo Vision with Sony SmartCam and GigE camera.

Application Areas

The Scorpion 3D SmartCam™ is designed for robot guidance and other vision applications where objects require to be located in 3D.

Benefits in 3D machine vision

The benefits in 3D robot vision are obvious:
- Works in physical coordinates
  - easy to verify - can verify against CAD drawings
- Object location does not degrade when the object position changes
- It is possible to detect that something is wrong
  - in 2D machine vision there is normally no quality measure
- The systems are more accurate
- The system will never fail

3D image generated by Scorpion

Optimized 2D and 3D machine vision algorithms

Both Stereo Vision with dual cameras and single camera MonoPose3D™ can be used to create, real-time 3D Vision, where an object's position in space is measured. Particularly valuable in robot guidance, this application offers not just 3D capability but also more robust machine vision. Using these latest algorithms, the application is more tolerant of difficult and challenging objects. There are a number of optimized and sub-pixel 2D feature-finding algorithms available from Blob4, CircleSegmentor and TemplateFinder3. These algorithms are easily combined to solve any application with focus on speed, accuracy or robustness.

Flexible and easy interfacing to standard robots and plcs

It is easy to implement reliable communication with plcs, robots or motion control units from any vendor. Scorpion is used with robots from ABB, Motoman, Kuka, Fanuc, Kawasaki, Sony and Rexroth Bosch over serial and tcp/ip ports.

Fast and ccurate 3D camera calibration

It is easy to recalibrate. There are different methods for calibration: planar checkerboard patterns, a fixed 3D reference object or the robot itself. All methods are efficient and very accurate 3D calibration procedures. As rule of thumb Scorpion provides sub-pixel accuracy in 3D or space.

Sample Application Areas

There is a multitude of opportunities for the compact and stand-alone 3D smartcamera:
- Robot Guiding
- Depalletizing
- 3D Identification and localisation
- 3D Measurement
- 3D Assembly Verification
- 3D Object Tracking
- 3D OEM applications

Software and hardware combinations

The 3D SmartCam is available in the following software versions:
- Scorpion Basic 3D SmartCam
- Scorpion Premium 3D SmartCam

The software versions can be combined with the following SmartCam version from Sony:
- XCI-V3 - Monochrome VGA - 256 MByte memory
- XCI-V100 and XCI-V100C - Monochrome and Color VGA - 512 MByte memory
- XCI-SX100 and XCI-SX100C - Monochrome and Color SXGA - 512 mByte memory

The cameras are delivered with reliable 1GByte solid-state disk with XPEmbedded Operating System and Scorpion Vision Software pre-loaded.

The open architecture SmartCam is the perfect companion for Scorpion Vision Software®. The software is well proven on both the first and second generation of Sony SmartCams. The OEM software Scorpion VisionX is also compatible with the camera.

Cost-effective, independant and compact unit

Scorpion Vision Software® combined with SmartCamera from Sony is an unbeatable package: An independent system with onboard processing of high quality images with fully integrated software.
Clear monochrome images are captured by the advanced image sensor at VGA or UXGA resolution and are processed. Vertical and Horizontal binning reduces image size and improves image quality. The cameras are available in colour.
A full version of the Scorpion Vision Software®, running on top of the Windows XP Embedded operating system, processes the images inside the camera.

SmartCamera mounted on Robot

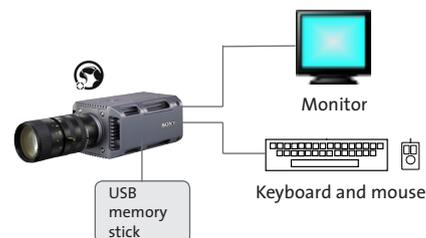The SmartCamera can be directly mounted on the robot.

There are training tutorials available on using Scorpion Vision Software with Sony SmartCams and on 3D Stereo Vision with Scorpion Vision Software.
See scorpion.tordivel.no.

Links to more information

Documents
Scorpion Vision Software Product Data
Scorpion Vision Software Overview
Scorpion Vision Software Tools
Scorpion SmartCam Tutorial

On the web
www.scorpionvision.com
tordivelblog.wordpress.com
Support web - scorpion.tordivel.no

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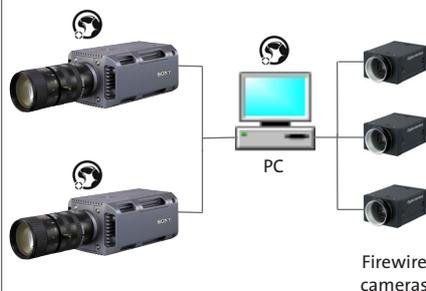
Flexible system configurations

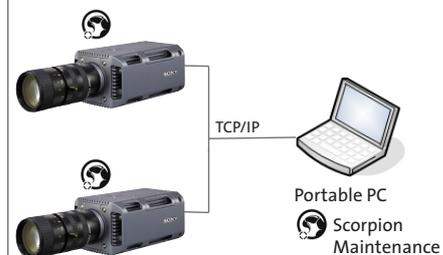### Standalone operation

Standalone configuration

Network operation

 - running Scorpion Vision Software®

Network configuration

The portable PC is used for profile configuration, profile transfer and as a remote desktop.

Technical Data

Operating System
- Windows XP Embedded
- 1 GByte Flash Card

Network Support
- XP Remote Desktop
- XP Remote Assistance
- FTP / HTTP
- Remote Disk Sharing
- TCP/IP

Language Support
- English, German and Norwegian

Compact and Lightweight
- 94 (W) x 70 (H) x 139,5 (D) mm
- 760 g

Scorpion 3D SmartCam™
- Scorpion Vision Software 3D Pre-installed
- VGA or UXGA Sensor options
- Monochrome or Colour
- 90 frames per second
- 1 GHz onboard processor
- 24VDC Power
- Ethernet, USB 2.0, RS-232 and Digital I/O interfaces
- External trigger
- C and CS Mount lenses
- Monitor output

For more information on the Sony SmartCam see www.sonybiz.net/vision

Specifications might change without any notification.

Scorpion Vision Software® is a registered trademark and Scorpion 3D SmartCam™ a trademark of Tordivel AS.