Scorpion Vision Software®
New Features in version 6

Scorpion Vision Software 6.0 is an open and complete framework for 2D and 3D machine vision.

It is designed to be the most powerful and flexible tool to implement demanding tasks without any kind of programming.

The system gives the user the choice of a small form factor with the Sony SmartCam or the power of a quad-core PC.

New 3D geometry tools:
MoveReference3D, LineFromPoints3D, Angle3D, NearestPointOnLine3D, PointFromLines3D, NearestPointOnPlane3D, ReferenceFromPoints3D, Point2DFrom3D, Point3DFrom2D

Advanced cylinder fit in a point cloud from the Scorpion 3D Modeller.

Complete 3D Machine Vision platform
Scorpion Vision 6.0 is a complete 3D framework for Machine Vision. With the release of Scorpion 6.0 the toolbox is expanded by more than 25 tools.

Important features are:
- Integrated 3D Visualization and 3D Images - point cloud support
- Powerful 3D reference systems - intuitive, convenient and easy to use
- Seamless 3D integration enables high precision 3D measurement using 2D image processing tools
- Advanced PlaneFit3D and CylinderFit3D establish reference systems based on point clouds
- Stereo Vision using from 2 to 4 cameras or images
- 3D Images and Models can be created from laser grid, stripe light or laser profilers.

3D visualization
is supported in 2D and 3D images.

- Superimposed on 2D camera images
- 3D Point Cloud - Scorpion 3D Images based on OpenGL viewer

Additional visualization for both types by a Python API.

3D reference systems
Following Scorpion 2D standards, 3D reference systems are intuitive, convenient and easy to use.

- Seamless 2D/3D integration means that a coplanar mapping is automatically created from any 3D reference
- Scorpion Result Reference removes complicated coordinate conversions
- Use any 2D tool anywhere in your 3D system. Scorpion moves the virtual camera for you.

3D geometry tools
The 3D toolbox consists of a complete set of tools to create lines, planes, intersections and reference systems.
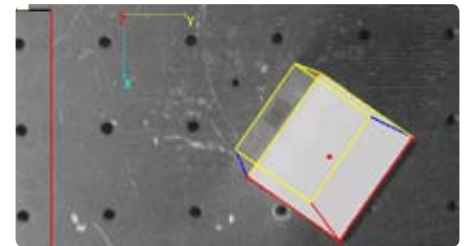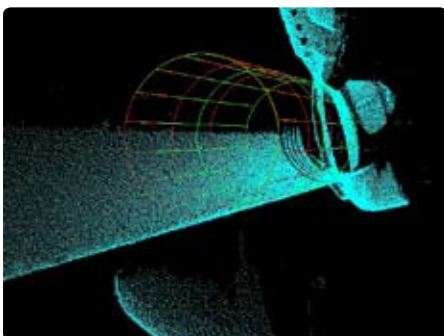

3D resampling of 2D images
Any 2D image can be resampled using a 3D reference system using the 3D camera calibration. This enables high precision 3D image processing using the 2D image processing toolbox. The object is located using Stereo Vision. A 3D reference is established as shown in the image below. This is resampled. Note that all 2D image processing tools can use the 3D references without resampling to do 3D processing.
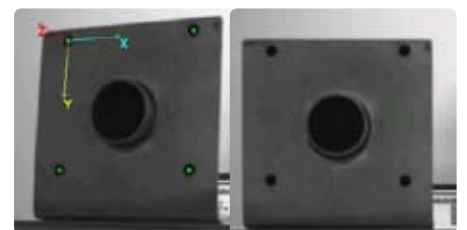
Processing 3D images
In Scorpion 3D images are represented as ordered or unordered sequences of 3D points - called a point cloud. The following tools works directly in point clouds with 3D reference support: FitCylinder3D, FitPlane3D and ExtractMap3D. Below an automotive part is located in 6 degrees of freedom using the Scorpion Modeller.
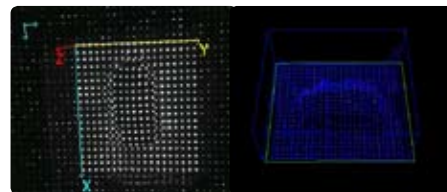
Scorpion Vision Software is backed by extensive research programmes
Tordivel participates in Auto3D, a research programme sponsored by the Norwegian Research Council and 3D Multicam. 3D Multicam is a project in the EU Craft Programme.

The Scorpion 3D development started in 2006, will be completed in 2009 with a total budget of 5 million euro. Participating research institutes and companies are; Sintef (N), TI (N), BP (UK), Pera (UK) and Blom Maritime (N). These projects will use Scorpion extensively and the results will continuously be used to improve and extend Scorpion Vision Software.

3D Robot Vision with the Sony Scorpion SmartCam

Complete support for AVT range of firewire cameras in Scorpion 6.0 based on AVT FirePackage.

For more information:

Tordivel AS
Phone +47 2315 8700
Fax +47 2315 8701
office@tordivel.com
www.scorpionvision.com

Scorpion Vision Software® is a registered trademark of Tordivel AS.

Real-time 3D Models with Laser grids
CreatePointCloud is a tool that matches dots from a laser grid using polar geometry and optimal cross correlation. Below a 19x19 laser grid pointing on a PC mouse. Using three camera stereo vision Scorpion creates a 3D model in 250 ms. The laser grid covers a 3D FOV of 140 x 140 x 80 mm with a resolution of 0.5 mm.
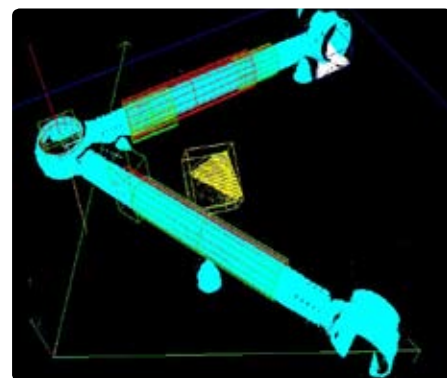
Advanced 3D Modelling - GCPS
3D modelling is available with the new option GCPS. The option enables Scorpion users to create high precision 3D models with a standard video projector and one camera. GCPS - stands for Grey Coding and Phase Shift. 3D measurements are performed on an automotive 'V stay' in the image below. Two cylinder fits are used to establish a high precision reference of the part.

The new option makes 3D Measurement, 3D Robot Vision, Random Bin Picking and 3D Assembly Verification feasible for everyone.

Wireless 3D Robot Vision with GigE
Combining Prosilica GigE cameras and Scorpion Vision Software users can make wireless robot vision systems. Scorpion Vision can run multiple 3D robot vision systems on one computer.

Supporting GigE Connectivity
GigE will change the way we use cameras in Machine Vision Systems and will open up new application areas. Scorpion Vision Software and Prosilica is the best platform to take advantage of the industry shift based on Ethernet connectivity.

Scorpion Vision Server™
The Scorpion Vision Server can run tens of vision sensor tasks or up to four demanding machine vision applications on one Industrial Vision Server. Important features are: Multiple Scorpion applications connected to a specific CPU core and remote debugging of the active system.

The typical hardware platform for a Scorpion Vision Server is GigE cameras, OPC, TCP/IP, Profibus, Quad Core Processors, Hot Swap Redundant Disk and Industrial Ethernet technology.

General Scorpion improvements
- Support for 1394a and 1394b and MS Vista 32 bit and 64 bit through Unibrain ubCore Firewire Stack
- Complete Support for AVT Firewire cameras through the AVT FirePackage
- Improved Toolbox tool support
- Continuous improvement of PolygonMatch™ technology - faster, higher accuracy and more robust
- Result Reference concept enhanced
- General improvement due to compiler technology
- GRIM - Python Image Processing and Image Enhancement Library including AutoContrast
- Support for XP large memory model
- MS Vista 32 bit support
- Improved Sony SmartCam support