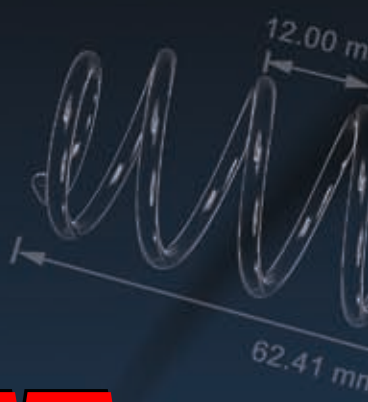


PROANALYST

Extract, Analyze, and Report Motion from Video



Extract



Revolutionary Motion Analysis Software

Most motion analysis applications are geared towards a specific industry or application. ProAnalyst breaks that mold by providing a series of video processing and motion analysis tools that can be applied to any video or image sequence, regardless of content or acquisition method. Analysis results can be instantly graphed, reviewed, compared to external data, and exported to a variety of output formats for reporting or presentation purposes.

Unlimited Applications

Used by engineers at NASA, Lockheed Martin, and Boeing, ProAnalyst is proven in the most demanding analytical applications. Leading research universities use ProAnalyst for physiological analysis from the cellular level to biomechanical level. ProAnalyst's comprehensive capabilities are also used in product development, testing, and manufacturing. With ProAnalyst, any digital video can yield quantitative data for any application.

ProAnalyst provides motion analysis tools that can be applied to any video or image sequence, regardless of content or acquisition method. With ProAnalyst, any digital video camera becomes a measurement instrument.



Flexibility

Compatibility with multiple file types

- Import digital video acquired with any camera. Supported formats: AVI, AVI 2.0, CIN, MOV, MPG.
- Work with sequences of still images. Supported formats: BMP, JPG, TIFF.

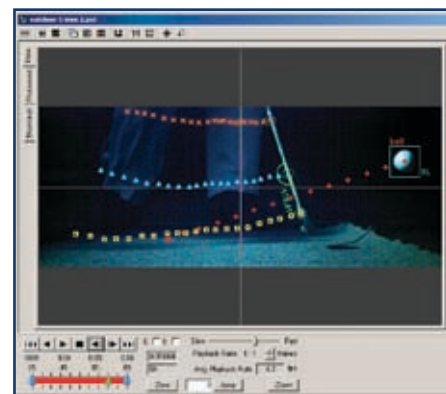


Image processing tools

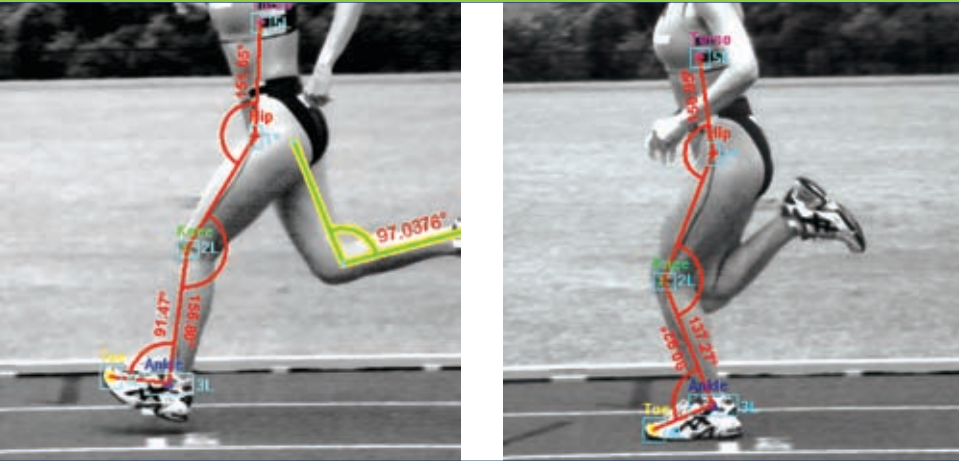
- Apply any of ProAnalyst's 40+ image controls and filters to correct or enhance your video.
- Combine filters to create customized image processing routines.

Scene Calibration

- Easily set the scale, origin, and coordinate system in your video.
- Compensate for front-to-back distortions using multiple plane calibrations.
- Use perspective calibration for videos filmed with non-perpendicular camera angles.

PROANALYST

Analyze



Used by engineers at NASA, Lockheed Martin, and Boeing, ProAnalyst is proven in the most demanding analytical applications.

Computational & Analytical Power

Automated Tracking

The fundamental strength of ProAnalyst is its ability to extract features from video sequences and to track those features throughout the sequence. The advanced algorithms in ProAnalyst enable users to track features without having to use special markers, such as ping-pong balls or stickers, in the experimental setup. After the user selects a feature in the initial video frame, the Automatic Tracking tools find and track that feature in all subsequent frames, providing real-time data and measurements.

1-D feature tracking

- Detect and track intensity changes (e.g. physical features, edges) along a line.

2-D feature tracking

- Track features without having to use optical markers in your experimental setups.
- View real-time annotations of distance and angle, and measurements of position and velocity.

Multi-Dimensional Data Analysis

In addition to standard data versus time graphing, ProAnalyst offers 2- and 3-axis graphing, allowing the user to compare data from different video sources simultaneously. A data import feature also enables synchronization of external sensor data with video analysis data. All of these results can be exported to Excel, DIAdem, or MATLAB. ProAnalyst even generates PowerPoint presentations, printer-friendly reports, and HTML web pages to bring your project to completion.

Data Manipulation

- Combine motion analysis data from video with data from external sensors and gauges.
- Apply FFTs and data filters, including Low Pass, High Pass, Scale, Difference, and Integral.

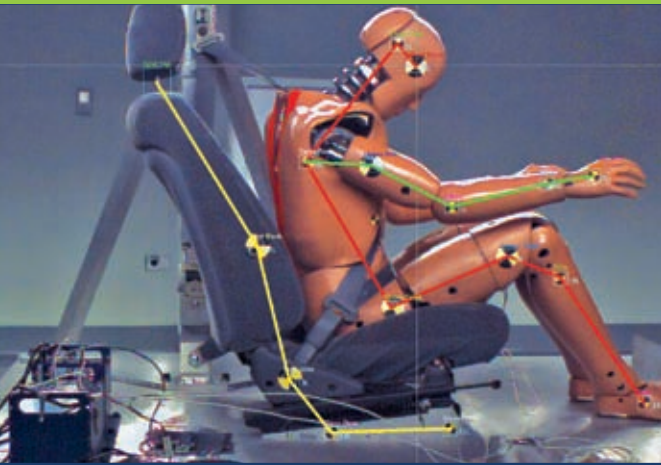
Why use motion analysis?

Researchers, engineers, and technicians have come to rely on video cameras as non-invasive testing devices. In industrial, scientific, clinical, and academic environments, video cameras provide a method of evaluating motion and performance from a distance, without interference from sensors.

When the goal of motion capture is quantitative results, not just images, motion analysis software is the perfect complement to high speed, infrared, and scientific cameras. Motion analysis of video provides time-dependent, numerical data on any movement-based activity, from the microscopic level to large-scale events.

Motion analysis software converts a video camera from an imaging device to an advanced scientific instrument. Using ProAnalyst, anyone can maximize the capabilities of today's imaging technology.

Report



ProAnalyst enables the user to track features without having to use special markers, such as ping-pong balls, in the experimental setup. The Automatic Tracking tools find and track natural features in each video frame.

Optional Toolkits

ProAnalyst Professional and ProAnalyst 3-D Professional editions allow the addition of toolkit modules for further functionality. Toolkits are collections of tracking and analysis tools, often geared towards specific applications.

Stabilization Toolkit

Remove unwanted jitter and vibration from a video.

Particle Counting, Sizing, and Flow Toolkit

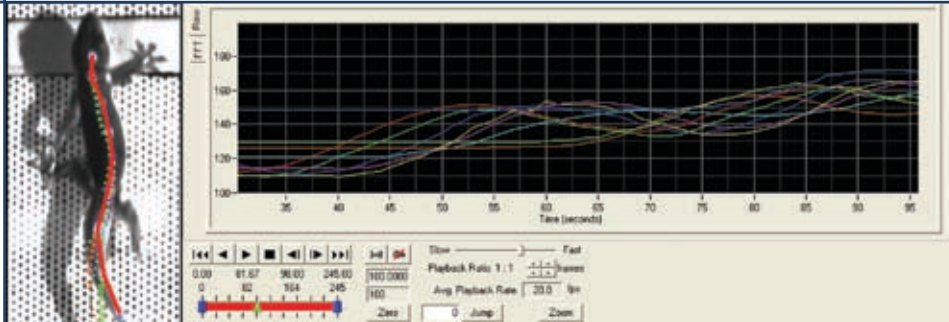
Count fragments or parts in a flow environment. Classify particles by size, shape, eccentricity or axial orientation.

Contour Tracing Toolkit

Trace irregular shapes (blobs) and compute their size, area, perimeter, center of gravity, and more.

Biological Cell Tracking Toolkit

Track cell motion through veins and arteries in microscopic images. Compute cellular proximity to vascular walls, flow direction, and more.



Efficiency

Enlightening Visualizations

ProAnalyst includes a Video Timeline, which displays video frames and data along a time axis. This feature provides an overview of a complete event and makes it easy to jump to specific moments within a sequence. ProAnalyst also has layered display capabilities, enabling users to overlay multiple videos, annotations, drawings, measurements, analysis results, and more.

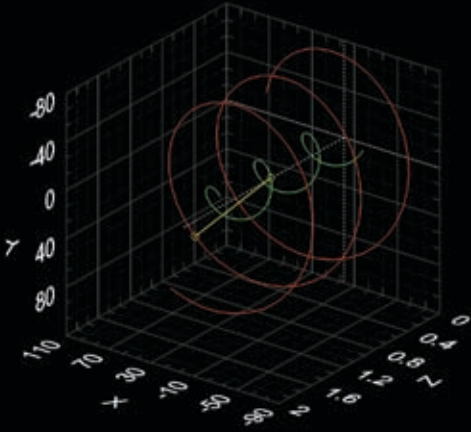
Timesaving File and Project Management

- Group and organize multiple videos, images, calibration files, and analysis results using the project-based interface.
- Apply groups of settings and calibration files from one project to another.
- Browse and preview video files with the Video Explorer.
- Easily locate and sort files in the Workspace View panel.

Presentations and reports

- Export data, analysis results, notes, and video clips to an HTML web page, a multi-slide Microsoft PowerPoint presentation, or directly to a printer.
- Share ProAnalyst files and data with others using the free ProAnalyst Viewer.

3-D Analysis



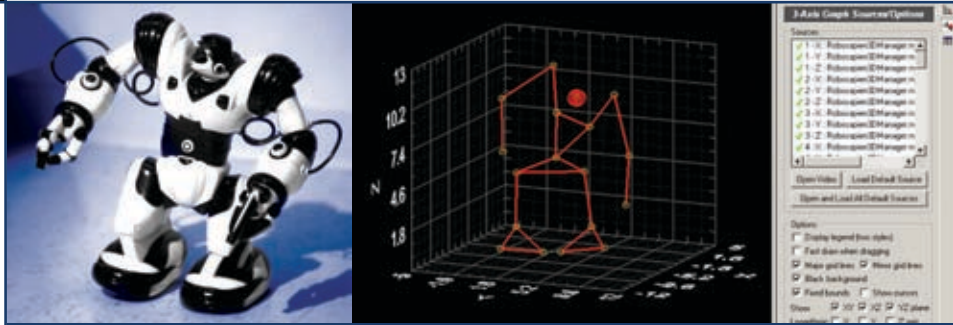
ProAnalyst 3-D Professional Edition creates 3-D representations and analyzes 3-D motion using images recorded by two video cameras. View and analyze your event from any angle and gain a new perspective on your data.

ProAnalyst 3-D Professional Edition

ProAnalyst 3-D Professional Edition brings the advanced motion analysis capabilities of ProAnalyst to another level. The 3-D Manager streamlines the process of creating 3-D representations from 2-D images acquired from two cameras. Simply drag and drop two calibration images in the 3-D Manager window and let ProAnalyst automatically determine the positions of the cameras. Then, add analyzed videos and allow ProAnalyst to calculate where your tracked objects are in 3-dimensional space. Finally, export your data to a fully customizable 3-axis plot and save a new video showing your analyzed event from any angle.

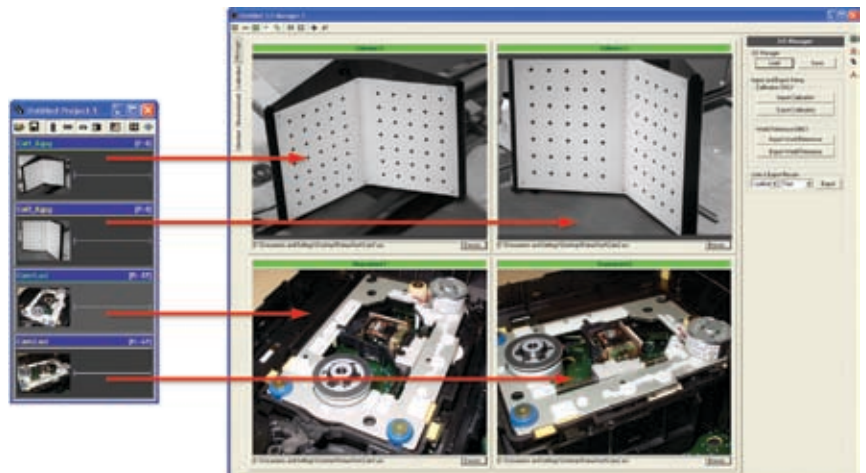
Integration with MiDAS 4.0

Add the camera control and video/data synchronization capabilities of Xcitex MiDAS 4.0 to ProAnalyst to comprise a complete 3-D motion capture and analysis package. The 3-D Capture Assistant in MiDAS 4.0 helps you set up your cameras, acquire calibration images and capture your event. This video and data is transferred to the 3-D Manager in ProAnalyst, where it is ready for calibration and analysis. The combined powers of MiDAS 4.0 and ProAnalyst make 3-D motion analysis simple and efficient.



Easy Calibration

For 3-D analysis, calibration is required to compute the precise location of the video cameras relative to the scene. Once a complex, time consuming, and mathematically involved process, 3-D scene calibration is practically foolproof with ProAnalyst. Simply take a snapshot of a calibration fixture from each camera, which can be placed at any distance or angle to the scene. Calibration fixtures, purchased from Xcitex or user-constructed, are based on geometric patterns. Now calibration is the easiest part of 3-D analysis.



PROANALYST

Features

ProAnalyst is available in three editions: 3-D Professional, Professional, and Lite. All three editions use the same advanced algorithms and technology.

	3-D Professional	Professional	Lite
FILE MANAGEMENT			
AVI, AVI 2.0, MPG, MOV, CIN movie file compatibility	•	•	•
BMP, JPG, TIFF image sequence compatibility	•	•	•
Project-based file management	•	•	•
IMAGE CALIBRATION and PROCESSING			
3-D Manager for creating 3-D models from two 2-D images	•		
Image processing and filtering	•	•	•
Perspective and multi-plane scene calibration	•	•	
3-D scene calibration	•		
Lens distortion correction	•	•	
VIDEO ANALYSIS			
1-D feature tracking	•	•	
2-D feature tracking	•	•	•
3-D feature tracking with epipolar line projection	•		
Measurements of feature position and velocity	•	•	•
Real-time annotations of distance and angle between features	•	•	•
Optional Toolkits	Available	Available	
GRAPHING and COMPUTATION			
Graphing within ProAnalyst with one-click FFT	•	•	
2-axis graphing	•	•	
3-axis graphing to compare three features	•	•	
3-D graphing and modeling in x, y, z space	•		
NOTES and REPORTS			
External data import	•	•	•
Tracking data export to DIAdem, Excel, MATLAB	•	•	•
HTML, PowerPoint, and print-ready report generator	•	•	



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