LabTrack

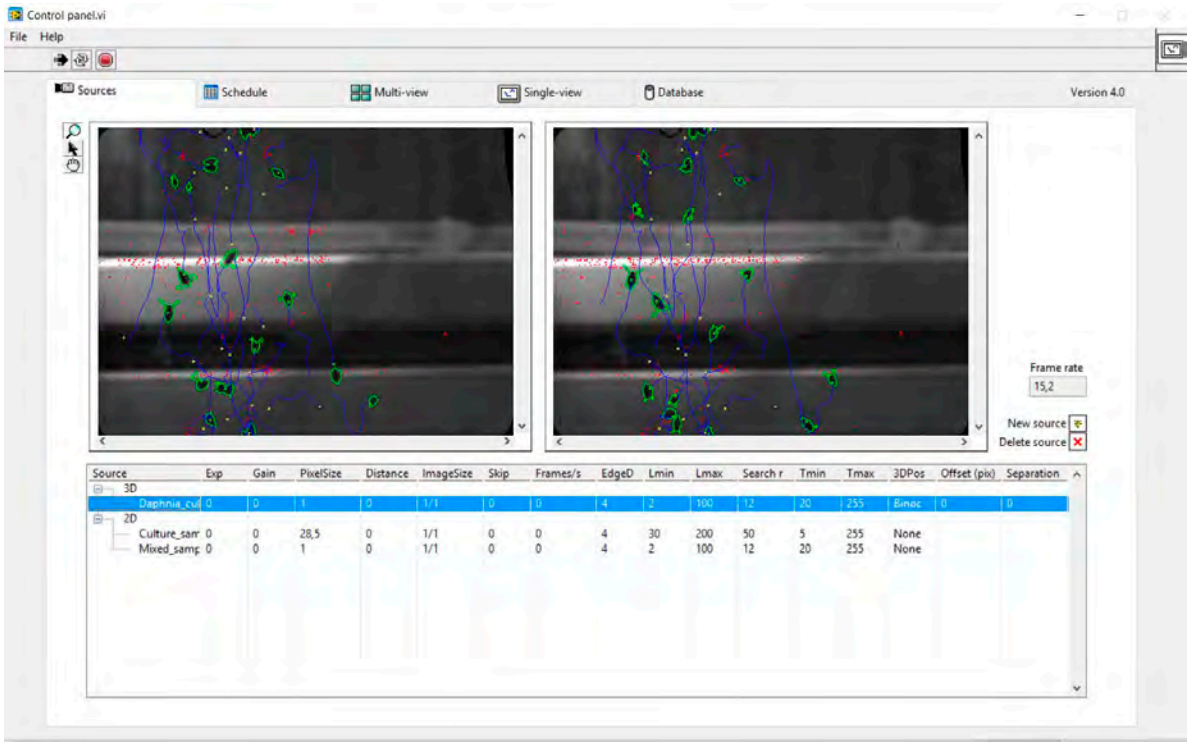
Tracking of moving organisms and objects

LabTrack is a Windows based software package for tracking moving organisms or objects in 2D or 3D video streams. LabTrack is suitable for behavior analysis of organisms from bacteria to zooplankton and fish. Signals from multiple cameras can be analyzed simultaneously, and hundreds of organsims or objects can be tracked in each video stream.

MAIN FUNCTIONS

- Online analysis of video streams in real time or offline analysis of saved video sequences
- Built in 2D or 3D video analysis function
- Identification of movements in complex scenes
- Graphical overlay of tracks on original video content
- Multiple sources for scheduled aquisition and analysis
- Scheduling for round the clock surveillance and experiments
- Database integration (My-SQL)

LabTrack front panel

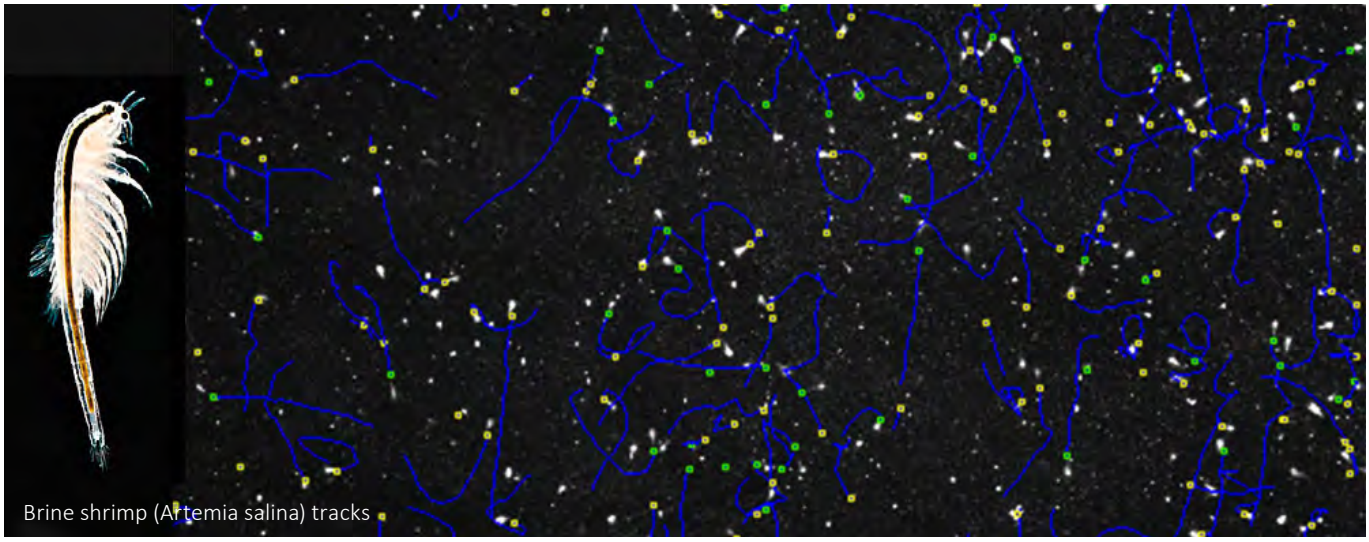


BIORAS
Rapid Analysis Systems for Biology and Life Sciences

TRACKING METHOD

5 different threshold methods for tracking moving objects are available:

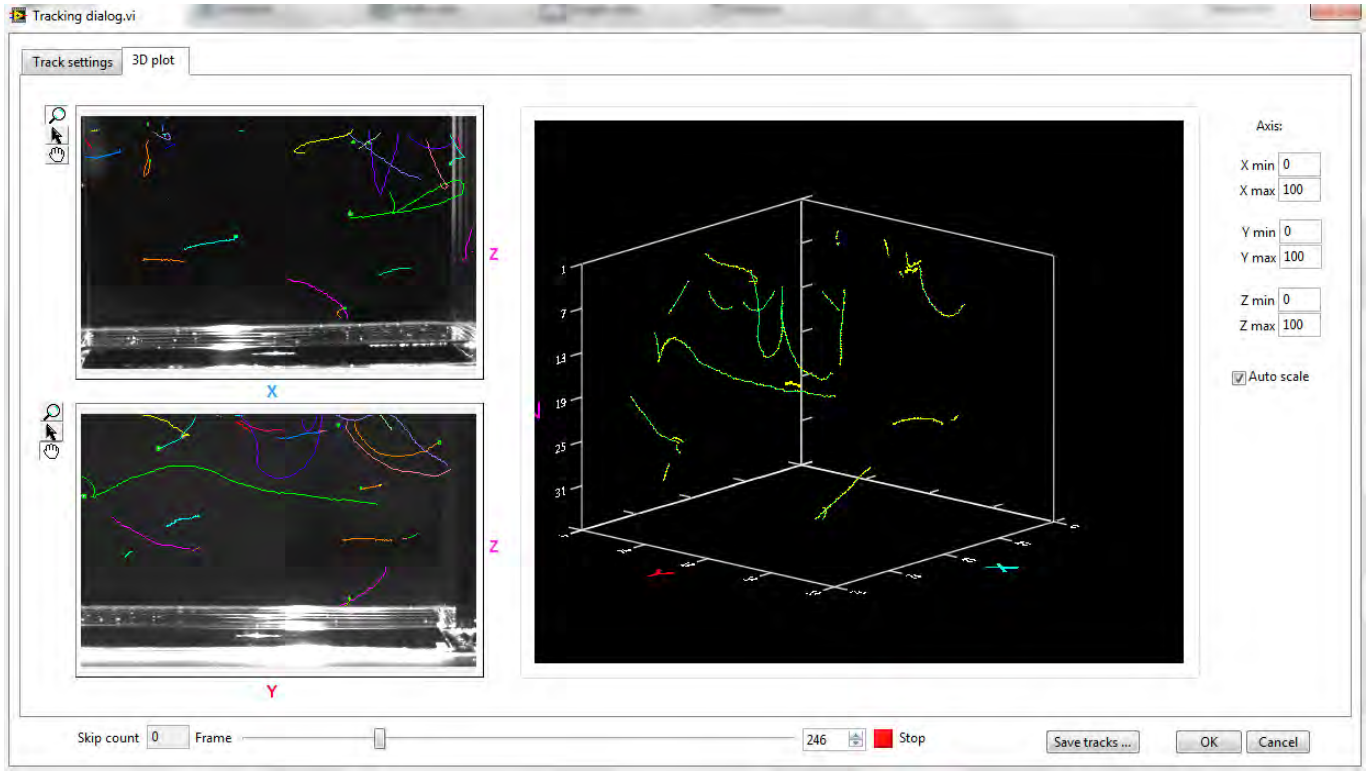
- Min background subtract works well for tracking any number of moving objects against an uneven background (default option)
- Edge filter is suitable for videos without complicated background disturbances, and where objects have low contrast against a uniform background
- Simple threshold, for strong contrast between objects and the background, tracking slow (or stationary) objects.
- Single background subtract, for scenes with a static background and few moving objects at start.
- Average background subtract for objects that are moving fairly rapidly.



Brine shrimp (Artemia salina) tracks

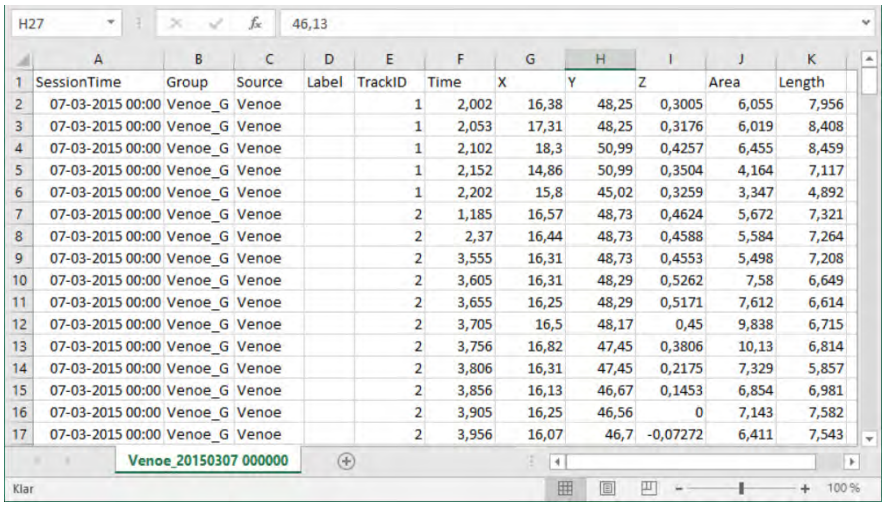
2D OR 3D TRACKING

Detect and track organisms in 2D or 3D. Signals from an array of cameras can be analyzed simultaneously, and hundreds of organisms can be tracked in each video stream. 2D tracking requires a single camera, 3D tracking requires 2 cameras perpendicular (at 90° angle) or parallel to each other. 3D tracks are reconstructed from two video streams, and the tracks are plotted in a 3D graph, as shown below.



DATA FORMAT

Data output is saved in spreadsheet style. LabTack can connect to a SQL database and automatically import data. This is a powerful tool for extracting data from large datasets.



H27 | 46,13

	A	B	C	D	E	F	G	H	I	J	K
1	SessionTime	Group	Source	Label	TrackID	Time	X	Y	Z	Area	Length
2	07-03-2015 00:00	Venoe_G	Venoe		1	2,002	16,38	48,25	0,3005	6,055	7,956
3	07-03-2015 00:00	Venoe_G	Venoe		1	2,053	17,31	48,25	0,3176	6,019	8,408
4	07-03-2015 00:00	Venoe_G	Venoe		1	2,102	18,3	50,99	0,4257	6,455	8,459
5	07-03-2015 00:00	Venoe_G	Venoe		1	2,152	14,86	50,99	0,3504	4,164	7,117
6	07-03-2015 00:00	Venoe_G	Venoe		1	2,202	15,8	45,02	0,3259	3,347	4,892
7	07-03-2015 00:00	Venoe_G	Venoe		2	1,185	16,57	48,73	0,4624	5,672	7,321
8	07-03-2015 00:00	Venoe_G	Venoe		2	2,37	16,44	48,73	0,4588	5,584	7,264
9	07-03-2015 00:00	Venoe_G	Venoe		2	3,555	16,31	48,73	0,4553	5,498	7,208
10	07-03-2015 00:00	Venoe_G	Venoe		2	3,605	16,31	48,29	0,5262	7,58	6,649
11	07-03-2015 00:00	Venoe_G	Venoe		2	3,655	16,25	48,29	0,5171	7,612	6,614
12	07-03-2015 00:00	Venoe_G	Venoe		2	3,705	16,5	48,17	0,45	9,838	6,715
13	07-03-2015 00:00	Venoe_G	Venoe		2	3,756	16,82	47,45	0,3806	10,13	6,814
14	07-03-2015 00:00	Venoe_G	Venoe		2	3,806	16,31	47,45	0,2175	7,329	5,857
15	07-03-2015 00:00	Venoe_G	Venoe		2	3,856	16,13	46,67	0,1453	6,854	6,981
16	07-03-2015 00:00	Venoe_G	Venoe		2	3,905	16,25	46,56	0	7,143	7,582
17	07-03-2015 00:00	Venoe_G	Venoe		2	3,956	16,07	46,7	-0,07272	6,411	7,543

Venoe_20150307 000000

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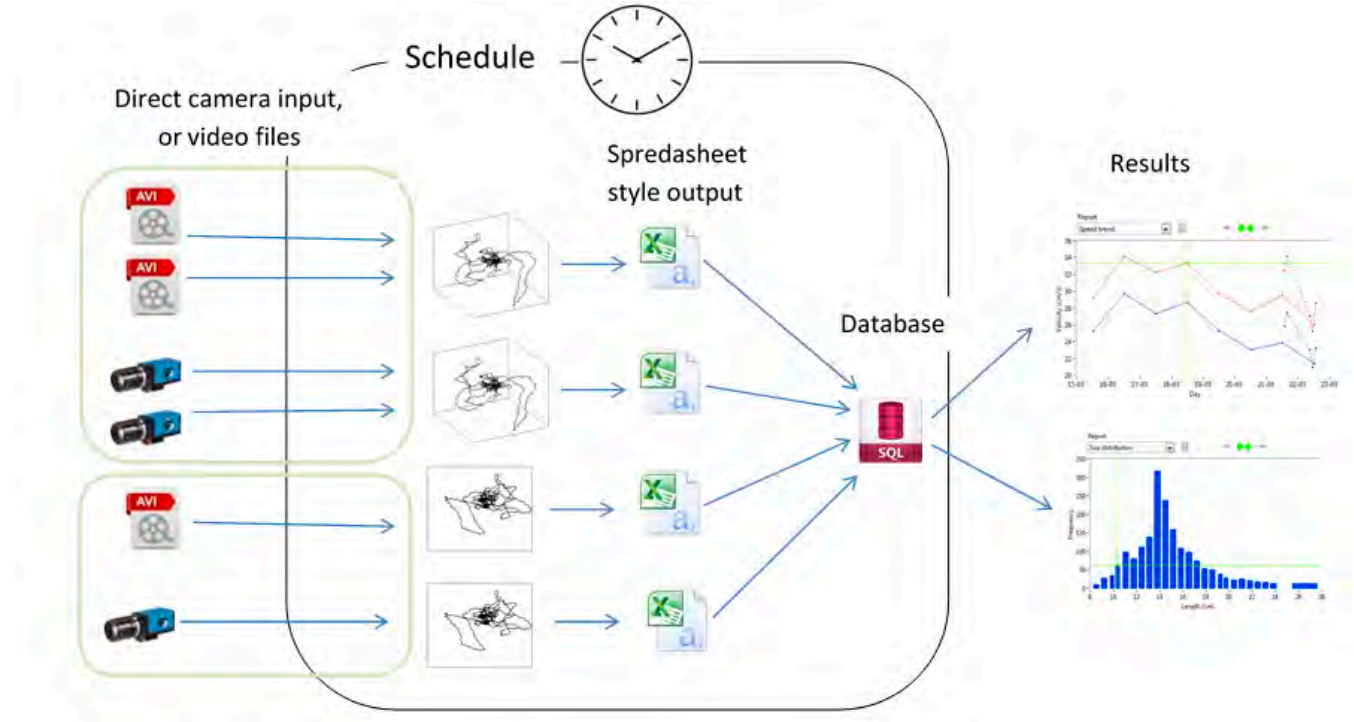
Data output

- sessionTime: Date and time of analysis
- Group: For recording and analysis of several video strams in parallel.
- Source: Source name
- Label: Track labels (optional)
- Track ID: Each track is individually numbered
- Time: Time for each data point in seconds from session start
- X: X coordinate
- Y: Y coordinate (3D plots)
- Z: Z coordinate
- Area: Area of each organism
- Length: Length of each organism

LABTRACK SYSTEM OVERVIEW

LabTrack can perform online video analysis, or analyze saved video files. The output is saved in spreadsheet style. LabTack can connect to a SQL database and automatically import data. The database is a powerful tool for extracting data from large datasets.



1 Online or offline video analysis

LabTrack can analyze 2D or 3D video streams online in real time, or offline through saved video files. Signals from an array of cameras can be analyzed simultaneously.

2 Schedule function

Scheduled video analysis enables analysis of multiple streams and repeated analysis at fixed intervals

3 Results

The data output is saved in spreadsheet style. LabTack can connect to a SQL database and automatically import data. This is a powerful tool for extracting data from large datasets.

FEATURES

- Support for .avi video file sources or online sources directly from camera streams
- Multiple stream sources can be configured for scheduled acquisition and analysis
- 3D reconstruction from video files or in real-time from dual video streams
- 3D camera configuration as either orthogonal pairs or parallel pairs
- Graphical overlay of tracks on original video content
- Intelligent algorithms for identifying movement in complex scenes
- Video and track data output
- Scheduling for round-the-clock surveillance and experiments
- MS-SQL database integration for flexibility and for advanced analysis requirements

A LABTRACK LICENSE INCLUDES

- Installation software package
- Free support during installation and startup
- NI vision runtime license
- User manual

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