

3D gait analysis system for a treadmill

KinemaTracer

The simple and compact treadmill system for objective gait analysis.

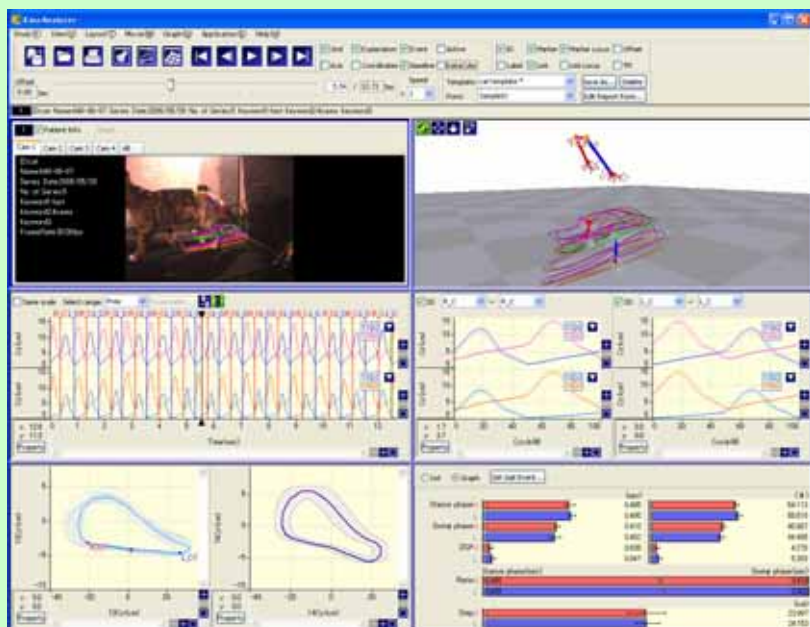
Simple hardware setup with four (or two) cameras connected to a PC.

Automatic detection of heel contact events and toe off events of both feet.

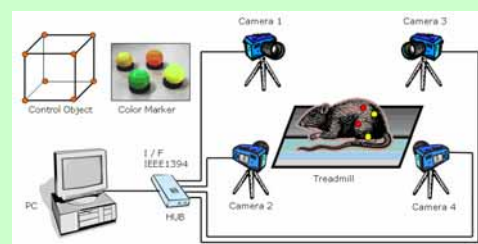
Calculation of standard gait parameters (swing, stance, double support etc)

Speedy 3D tracing by color marker recognition.

Applicable to various animals and movements by adjusting marker size and color.



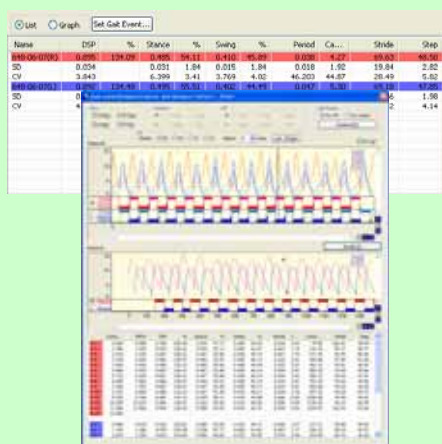
1 : Simple hardware setup



This space-efficient capture system adopting small-sized cameras allows you to build a system in almost any location. These cameras can be synchronized simply by connecting them to a PC via firewire cables. You can make simple and compact motion capture environment.



2 : Various features for gait analysis -Detection of gait events and normalize-



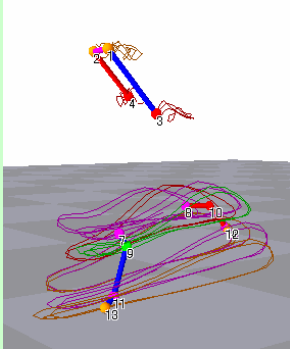
Heel contacts events and toe off events are automatically detected from 3D coordination.

The software calculates temporal factors (swing, stance, double support) and distance factors (step, stride), and show variance and difference between both feet.

Also, each cycles of movement are retrieved automatically and normalize the multiple cycles of movement.

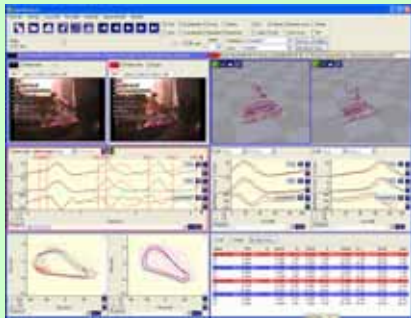


3 : Speedy 3D calculation



The processing time of 3D calculation has been much reduced. The movie is saved on a PC directly, and all markers can be traced at a time.

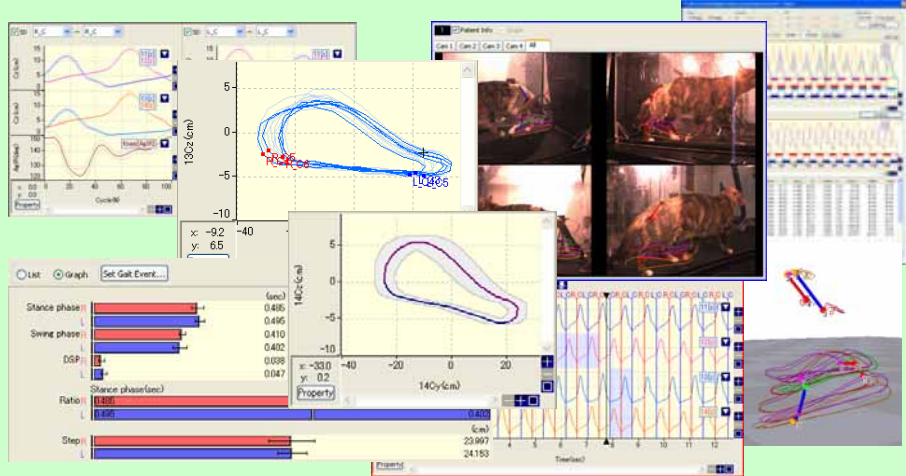
4 : Data comparison



You can open multiple data and displays multiple movies, stick pictures, and graphs in piles. You can compare multiple animals or timeline.

5 : Flexible graph display for various research interests

The software displays movie from four cameras, stick picture, gait parameter, normalized graph, XYZ coordination, timeline of joint angle. You can make a template of display items, which enables you to evaluate the data based on the common parameters.



Hardware specification

Cameras	Interface	Firewire (IEEE1394)
	The number of units	4 or 2 units
	Synchronization method	Automatic
	Resolution of images	VGA (640×480)
	Frame rates	30 / 60 fps
Markers	Type / Shape	Colored / Spherical
Calibration	Method / Shape	DLT method, modified DLT method (lens distortion correction) / Cube

Software specification

Basic analysis	XYZ plot, Speed, Acceleration, Angle of joints, Angular velocity of joints, Angular acceleration of joints
Gate analysis	Normalization, Average, SD, and CV of Stride length, Step length, Stance phase, Swing phase, Double support phase, Gait cycle, Cadence, Body-sway
Rendering	Stick picture, Tracking, Super impose, Time series graph, Lissajou graph, Normalization graph, Numeric list, Rendering items configuration (Template)
Comparison	Overwrite graphs, Motion images, Parallel rendering of stick pictures, Simultaneous playback of multiple data
Output data	XY plot, XYZ plot, Graphs, Numeric lists
Digitize	Auto-tracking, Reverse auto-tracking, Multiple maker auto-track, Position anticipation, Auto-interpolation, Manual-digitize

Specifications are subject to change without notice.

MUROMACHI KIKAI CO., LTD.

4-2-12 Nihonbashi-Muromachi, Chuo-ku, Tokyo, 103-0022 JAPAN
 E-mail:sales@muromachi.com
 Kinema Tracer

TEL:81-3-3241-2444
 FAX:81-3-3241-2940