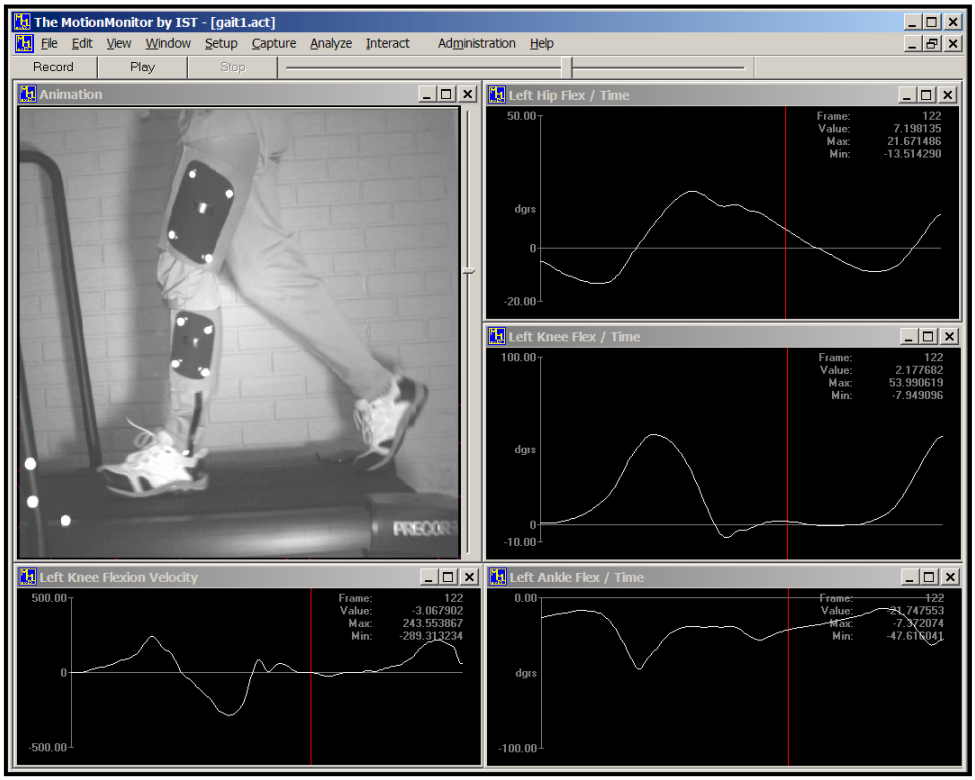
The most advanced data acquisition and analysis system in the market place offers precise measurement of human motion for applications using Motion Analysis Corporation Cameras

The MotionMonitor™ *with Motion Analysis*

- ***The MotionMonitor*** is a totally integrated 3D real-time data collection system with Motion Analysis cameras:
  - *Take advantage of the **fastest** measurement rate and **highest** resolution cameras available in the marketplace (Motion Analysis Corporation's Eagle 4).*
  - *Speed system setup and shorten learning cycles with a complete **Turn-Key System**, or increase functionality by adding to existing Motion Analysis installations.*
  - *Automatically track 3DOF markers and 6DOF rigid bodies in **real time** for fast data collection, analysis with no post-processing or digitizing.*
  - *Capture **high impact/high speed activities** with sampling rates up to 10,000 Hz.*
  - *Track and digitize anatomical coordinate systems and virtual joint centers or use the **Helen Hayes/Cleveland Clinic** marker sets.*
- Available with all of ***The MotionMonitor*** functionality including:
  - ***Synchronous data collection** from markers, forceplates, emg, eye trackers, video and other analogue data.*
  - *Intuitive, drop down menus for selecting kinematic and kinetic data, including **joint forces and moments,** and for defining new variables using standard mathematical notation.*
  - ***Pre-defined protocols** for specific applications such as gait, balance, motor control and sports.*
  - *Automatic event marking, normalization, ensemble averaging and other **data reduction functions**.*



The Motion Monitor

...The Total Solution in Motion Capture®

Real time **data** acquisition, analysis, and 3D visualization.
Turnkey **hardware** solutions. Upgradeable as your needs change.
Research Design & System Engineering **consultation**.

The MotionMonitor is a totally integrated 3D data collection system for use in clinical, biomechanical, neuro-control, and sports medicine applications involving the analysis of complex motion Data from Ascension and Polhemus magnetic trackers, NDI Optotrak optical sensors, SR Research's EyeLink© II, Qualisys and Motion Analysis passive video, EMG, forceplates, digital video, and other analogue devices are collected by The MotionMonitor, fully synchronized, and presented in real time with state-of-the-art computer renderings and graphic displays. Data output includes all kinematic and kinetic data including joint forces and moments computed with either a top-down or bottom-up inverse dynamics model. Angle data is available as quaternions, cosine matrices, Euler angles, Grood & Suntay angles or projection angles. The user can specify the reference frame, rotation sequence, and axes layout in post-processing. Data can be reported in either the time or frequency domains and includes filtering functionality. Full Body biomechanical computer renderings include stick figures, skeletons, and humanoids. Detail renderings include high resolution images of hand, foot, and spine as well as user-generated mesh files.

The MotionMonitor support team offers a comprehensive package of services designed to meet the unique requirements of each client's research. Services include turn-key systems design, integration of existing client hardware, maintenance, warranty protection, training, and support following installation. Worldwide, IST has built a dedicated following among university researchers.

Position Capture Technology by Motion Analysis Corporation – passive optical three degree-of-freedom markers and 6 degree-of-freedom rigid bodies.
Sampling Rate: up to 10,000 Hz depending upon camera type
Resolution: Up to 2352x1728, over 4 million pixels

Position Capture Technology by Qualisys - passive optical three degree-of-freedom markers and 6 degree-of-freedom rigid bodies.
Sampling Rate: up to 1,000 Hz depending upon camera type.
Position accuracy: .1% of field of view.
Resolution: 1 in 60,000 of field of view.

Position Capture Technology by Ascension Technology - magnetic six degree-of-freedom sensors.
Sampling Rate: 30 to 144Hz for each of two to fourteen sensors.
Range: Extended Range Transmitter will measure 12 feet from transmitter for total range of 24 feet. Standard range will measure three feet from transmitter for total range of six feet.
Position accuracy: Extended Range Transmitter: up to 0.3 inches/0.5 degrees at a five-foot distance from transmitter and 0.6 inches/1.0 degrees at a ten-foot distance from transmitter. Standard Range Transmitter: up to 0.07 inches/0.5 degrees at 36 inch distance from transmitter. MiniSensors: up to 0.07 inches/0.5 degrees at 12 inch distance from transmitter.
Resolution: Extended Range Transmitter: is 0.03 inch/0.1 degrees at five feet and 0.1 inch/0.2 degrees at ten feet from transmitter. Standard Range Transmitter: is 0.03 inch/0.1 degrees at 36 inch distance. Mini Sensors: is 0.02 inch/0.1 degrees at 12 inch distance from transmitter.

Position Capture Technology by Northern Digital - active optical three degree-of-freedom markers.
Sampling Rate: up to 4,600 Hz divided by the number of markers.
Range: 34 degree field of view offers 2.6 x 3.5m space at 6m separation from the camera
Position accuracy: Up to 0.1mm RMS at 2.25m from sensor. 0.45 to 0.9mm RMS at typical operating distances.
Resolution: 0.01mm at 2.25m from camera.

Position Capture Technology by Polhemus – magnetic six degree-of-freedom sensors
Sampling Rate: Fastrak: 120Hz divided by the number of sensors (maximum 4) to be tracked; Liberty: 120Hz or 240Hz with four, eight, twelve, or sixteen sensors.
Range: Specifications below for Fastrak and Liberty at 36 inches (90cm), reasonable results up to 72 inches (180cm)
Position accuracy: Fastrak and Liberty: 0.03 inches (0.08cm) and 0.15 degrees RMS
Resolution: Fastrak: 0.0002 inches (0.0005cm) and 0.025 degrees; Liberty: 0.00015 inches (0.0004cm) and 0.0012 degrees

Analogue Data: 16 channels of A/D data collected on Measurement Computing's PCIM 1602-16 bit PCI board. Sampling rates up to 150khz multiplexed. System will support up to four units for a total of 64 channels. Includes software for processing of forceplate and EMG data.

A/D Interface Panel: Sixteen A/D BNC connectors, four D/A BNC connectors, one DB25 male digital I/O connector, one DB25 female with jumpers for internal connection of Noraxon and Delsys EMG or Bertec Forceplate amplifiers. Connection from panel to Measurement Computing's PCI A/D card.

Event markers for event identification, motor control experiments and externalization of system timing pulses include LED's, Light Relays, FSR's and hand held event markers.

Computer: Pentium 4 Processor 2.8 GHz or faster with 512meg of RAM, 160 gb hard drive or larger, CD/DVD-RW, 19-inch LCD monitor, wireless keyboard and mouse, and Windows XP Professional operating system.

Video Capture: 30 fps, up to three cameras.

Enclosure: Desk top chassis or Shock mounted enclosure on casters suitable for shipping; 23 inches x 23 inches x 23 inches.

Specifications subject to change without notice. Revised 6/10/05

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