



Advanced Interactive Tools for Human Simulation

Motion Analysis Corporation (MAC), incorporated in May of 1982 with principal executive offices located in Santa Rosa, California, is the world's largest manufacturer of high performance optical instrumentation systems that measures and analyzes the movement of objects in 3D space.

MotionAnalysis



10-person, full-body, live capture sequence

This propriety technology that uses the principal of phase-conjugated reflectivity*, and is exceptionally accurate, repeatable and reliable. This technology may be best known for its application in CGI, special effects on the big screen, in movies from "Total Recall" to Peter Jackson's "King Kong", -- and is now being applied to virtual engineering.

Through the Dassault Systèmes' CAA Adopter program, the company has developed a real-time, V5 Human API to enable rapid assessment of human interaction in virtual scenarios. The V5 API connectivity captures and constructs the skeletal movements of a person(s) wearing



Simulation of specific population in V5

spherical reflective spheres, called markers, based on their respective anthropometric locations. This is all done in real-time and streamed into the V5 Human application where the movements of the V5 mannequin now correspond to those of the person wearing the markers. Being able to freely drive the V5 mannequin from actual physical movements, without the use of key-framing or IK, is enormously liberating in the time that it saves in building simulations, modeling, and analyzing human movement and interaction. Further, such scenarios may be saved within the V5 application and replayed later in a post-process fashion at a more convenient or appropriate time. Postures and gestures may also be recorded and saved in standard V5 Human catalogs, thereby greatly enhancing the concept of re-using data.

"MAC's commitment to developing a state-of-the-art Motion Capture capability for Dassault Systèmes' V5 Human has resulted in an extremely compelling solution for users of V5 Human who wish to quickly and intuitively capture complex series of natural human postures and motions," comments Mark Morrissey, general manager Safework Inc., Dassault Systèmes' competency center for Human modeling and ergonomics. *"As a member of the CAA Adopter program, MAC has worked closely with Dassault Systèmes' to ensure that real-time motion capture data can be seamlessly integrated into CATIA and DELMIA simulations with great fidelity and efficiency."*

Human interactive simulation and modeling is a very critical process. Originally, the motion tracking technology along with peripheral devices such as wearable displays and finger movement recognition have been tethered devices facilitating limited interactive volumes. Motion Analysis' unique technology with its breakthrough

CAA, V5 Human API advances the interactivity in Interactive Applications. Since this proprietary technology is tether-less. It facilitates full-scale, wide-area simulations, finally realizing the value proposition in applying virtual reality solutions to real world challenges. To further advance the adoption of full-scale, wide-area simulations, Motion Analysis has most recently included, in the CAA, V5 Adopter PID, its TALON Hand Module.

This is a mechanical, exoskeletal device, which accurately maps actual finger movement of the person wearing the device to that of the V5 mannequin. *"Adding detailed hand and finger movement to the V5 mannequin, brings a much more accurate and realistic representation of detailed human interactivity within CATIA and DELMIA simulations. Realism in virtual design is what we are all trying to achieve,"* comments Tom Whitaker, CEO of Motion Analysis Corp. The TALON is a completely wireless, 19 sensor device available in either left or right hand variants.

The Motion Analysis CAA, V5 Human API is applicable in Virtual Manufacturing, Assembly, Maintenance and Maintainability, and Training; Ergonomics and Human Factors; Full-scale, Advanced Visualization; and Virtual Factory Studies including plant layout.

Motion Analysis' assisted human modeling and wide-area tracking solutions have been accepted and implemented at Lockheed Martin, United Technologies, Textron, NASA, Ford Motor Company (including Volvo and Mazda), Toyota, Nissan and other blue-chip engineering and manufacturing companies, with a customer portfolio highly synergistic with that of Dassault Systèmes.



TALON Hand Module - right hand

Motion Analysis is an ISO9001:2000 Registered Company

*Incoming light is reflected as a counter-propagating wave with almost zero loss of energy.

Motion Analysis Corporation
3617 Westwind Blvd. / Santa Rosa, CA 95403 USA
tel.: 707.579.6500 f. 707.526.0629
Information about Motion Analysis at
www.motionanalysis.com