MoX

Camera-less Motion Capture

No Markers, No Cameras, No Occlusions & Any space Motion Capture Starting From VMSENS

V.M.SENS

Camera-less Motion Sensing Technology

Apply to … …

Virtual Reality & Training **Entertainment** **Movement Science**

MoX Suit is a flexible, camera-less full-body human motion capture solution. This portable system can be used indoors and outdoors.

Mox can be used in 3D character animation (for game, film, TV, advertising), Virtual Reality / Augments Reality, Training & Simulation, Sports science, Rehabilitation, Biomechanics research area.

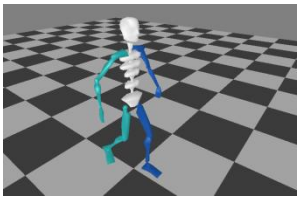
Advantage

- Flexible and easy to use
- Real-time previsualization
- Save post-processing time
- Clean motion data

Movement in Anyware

MoX Suit Hardware

- 17 inertial motion trackers
- Special design & comfortable motion capture suit
- Advantage strap-down sensor system
- Wireless data transfer up to 1000meter(Max)
- Portable case for easy transportation



Real-time previsualization

MotionBox Studio Software

- Real-time visualization, recording, playback and editing mocap data
- Export pop motion capture file formats .BVH .C3D and .FBX
- Advanced human body model provides output of 23 body segments
- Real-time streaming into Autodesk Motion builder ®, Maya®

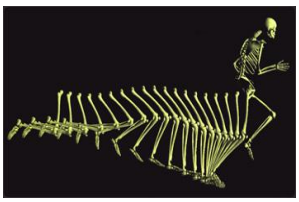
Function

- Freedom Movement, can be used in anywhere, office, outside, no special lab design
- Completely wireless, no wire-line restrictions
- Use anywhere, under any lighting condition
- No occlusion or line-of-sight restrictions
- Fast click into the specially designed straps belt and mocap sensor suit
- Friendly software for real-time Motion capture
- Open API and SDK, easy for development
- Special design pipe line for 3D animation work

3D Animation design

Motion Accuracy

- High performance inertial motion tracker
- Accuracy biomechanical human model with 23 segments



Post process & analysis

System Spec

Number of tracker

Full body	17
•Up-body	11 (Hip contain)
•Low-Body	7 (Hip contain)
backup	3

Hardware Interface

Data Interface	Wireless 2.4GHz ISM
Wireless Range	Office : 100 – 150 meters/ Customize: 1000 meters

Wireless Receiver

Number	2
RF	Mon-Bus 2.4GHz
Interface	USB/ RS-232

Tracker Performance

Range	± 360 deg
Acceleration	50/160 m/s² (± 5/ 16g)
Turn of rate	2000°/sec
Static accuracy	< 0.5 deg
Dynamic accuracy[2]	2 deg RMS
Angular resolution	0.05 deg
Max updated rate	120 Hz

1 in homogeneous magnetic environment,

2 under condition of VMSENS algorithm, decided by motion type

*more detail in iVM-w/ VM-i specification

Weight

MoX motion tracker	32g
MoX Master	250g
MoX suit	300g
Total body carry	2kg

Dimensions

MoX motion sensor	32×40 mm
MoX Mater	135×80×28mm
Suitcase	4750×3550×1800mm

Portable case for easy transportation

Power

Supply system	2 MoX-Master
Power adapter	110-240VAC/ 12VDC
Power source	4 AA NIMH
Operating time	3 hours
Charging time	1.5 hours

Accessories

Gloves with sensor pocket	2
Head band with pocket	1
Foot mount	2

Setup time

Base calibration	Less than 15 minutes
Advance calibration	Less than 30 minutes

MoX biomechanical model

- With standard 23 segments human model
- Each sensor calibration with initialize parameters
- Scalable human model, can be adapted to Euro/ Asian/ human bodily form
- Advance spine and shoulder parameter design, more detail in these segments

Body calibration

Flexible calibration tools, without assistance from a second person, every one can working the easy used tools

- Base calibration can be done in 10 seconds, only with the "T" pose
- Only the basic human body size parameter needed
- Advanced calibration can be used in high accuracy motion capture data

MoX Engine

Out put

- Full body segment kinematics (position, velocity, acceleration, orientation, angular velocity, angular acceleration)

Foot Slide

Advance human body Permanent Joint Link model (PJL), motion capture data more accuracy, no foot slide

Permanent Floor Contact

With the improvement of ZVU algorithm , achieve the going stairs / climbing / walking without permanent contact with the ground, reducing the workload of mocap data adjustment

Updated rate

- Internal update rate 120, 100, 60 Hz
- Output frame rate120, 100, 80, 60, 50, 30, 25, 24 Hz

Environment disturbance

- Short time of magnetic disturbances
- EM disturbance
- Open API support hybrid motion capture for the calibration of environment disturbance

Multi person capture

- Support the 3rd party position input
- Multi person in the same PC and same 3D scene

MotionBox Studio Software

Function

- Fast setup and calibration
- Real-time preview of 3D motion capture data
- Flexible development kits

Output Format

- .BVH (Biovision Hierarchical Data)
- .FBX
- 3D position, 3D orientation, 3D acceleration, 3D velocity, 3D angular rate, 3D angular acceleration

Powerful MotionBoX Posture Network Streaming can direct, real-time interface with one or more MoX systems on different Application & PC

MotionBox Bio-Professional

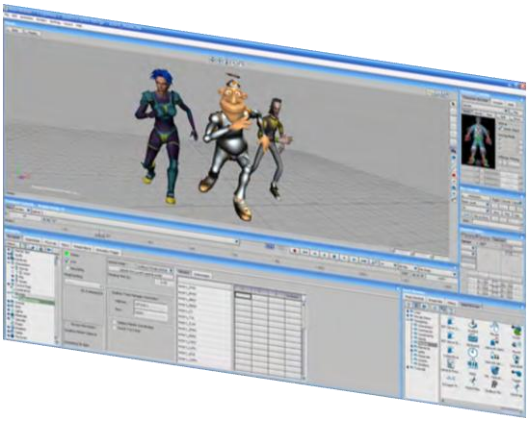
- Camera reference support
- C3D support
- Multi persons support
- Real-time and post-processing data analysis

The third party support

- Motion Builder
- Matlab
- LabVIEW
- Worldviz Vizard
- Virtools
- Virtual Reality Peripheral Network (VRPN)

MoX motion data streaming

- Motion data streaming on the network(TCP/IP)
- Multi applications receive the motion data on the monitor
- Autodesk Motion Builder ® plug-in support in the data streaming



MotionBox SDK

- Easy integration with custom applications
- Real time preview of motion capture data
- Easy and quick calibration
- Pre-recorded mocap files for post-processing
- Support real-time 3D position aiding input
- Option data support: 3D position, 3D orientation, 3D acceleration, 3D velocity, 3D angular rate, 3D angular acceleration

Operating requirements

OS	Windows XP/ Vista/ 7/ 8
Processor	Dual core 2.6Ghz or higher
Memory	2GB RAM or more
Graphics card	DirectX11， memory 512 or more
Interface	USB

MoX Engine SDK

- Easy integration program and source code support
- 3D character porting display
- Engine directly output motion data (.dll)
- Support the third party position and orientation data

Service

Hardware	2 years
Software updated	1year

WHO need us?

Animation

In the innovating fields where motion and orientation tracking is needed, a realistic effect can be created by using the motion tracking devices, The design of a 3d video game or a movie with special effects require a huge work on 3d animations. VMSENS offers a low cost and easy to use solution for capturing humans, animals and objects movements. Placing our sensors on body segments allows you to track accurately movements in real time. No need for an expensive studio: our products can be used anytime, anywhere.

Virtual Reality & Simulation

Inertial Systems have a primary importance in virtual reality systems. We provide the smallest motion tracking devices for the applications, for example, to track head/ arms/legs movements. According to the segment orientation, the virtual reality system can change the view point in order to reflect, in real time, what you are looking at. By moving the sensor in your hand, you can also interact with virtual objects, just as if you hold the object for real.

Biomechanical, Gait Analysis & Rehabilitation

Motion capture is ideal for a wide range of sports applications, both as a research tool and in training situations. Physical limitations and movement optimization are of great interest in the prevention of injuries to athletes.
In addition to biomechanical studies, motion capture may be used to study how external, psychological factors affect balance, movement ability and performance. The VMSENS motion tracking & analysis system is widely used in the sport science, human motion analysis field, the human motion tracking and analysis results can speed the human motion analysis of and promote the interdisciplinary researches. Traditional systems for capturing human movement require expensive and fixed infrastructures that define and limit the subject to a specific tracked volume. The VMSENS wireless motion tracker offers a sourceless solution that allows the subject to move freely in any environment.

Vmsens Inertial Technology specializes in the design and development of ultra high performance inertial motion tracking technologies meeting the needs of our global customers.

As the leading solution provider of inertial motion tracking technologies, we provide miniature (MEMS) inertial motion tracker/ AHRS (VM-i, iVM-x , iVM-w) and portable, occlusion free, camera-less inertial motion capture system (MOX), combining high-quality hardware and easy-to-use software, we offer innovative ground-breaking solutions.

Vmsens' R&D stuff has created unique intellectual property in the field of sensor fusion algorithms and biomechanical modeling; our inertial tracking system has been proved to be accurate, fast response, reliable, and robust against any harsh environments.

Now, Vmsens brings all the benefits of the inertial tracking solution to market with our unique motion tracker product line.

Industrial Application

Equipment Control and Stabilize
Unmanned Vehicles control
Robot controls
Platform Stabilize
Personnel Tracking

Media & Entertainment

Animation
Games
Virtual Reality

Virtual Reality & Simulation

Training Simulations
HMD Walking in Virtual World
Full-Body Motion Capture
Interaction

Biomechanics

Biomechanics
Sport Science
Gait Analysis & Rehabilitation

FCC ID: 2AB85-PV0719

vmsens industrial technology limited

Model name: motion tracker

Model No.: Mox Suit 06

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment。

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

V.M.SENS

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