

MatlabSDK instruction manual

1. Folder

(1)、XINGYING_MatlabSDK_Demo ----- The source code of client receiving program for reference.

(2)、lib----- The directory of library.

2. XINGYING_MatlabSDK_Demo SDK data receiving

(1)、Set the PC IP address to 10.1.1.198 and subnet mask to 255.255.255.0. Disable the firewall and network blocking software.

(2)、Run XINGYING motion capture software as an administrator.

(3)、Select the data broadcast interface, select "NIC Address: 10.1.1.198".

(4)、check "Setting","SDK Enabled".XINGYING sends motion capture data。

(5)、In live mode, click run;Or, in post-process mode, play back data.

(6)、run XINGYING_MatlabSDKsample to receive SDK data.

Note: In post-process mode, you need to close the client receiver before switching the motion capture data.

3. XINGYING_MatlabSDK Instruction

(1)、Initialize(XINGYING software NIC Address)

```
szServerAddress = '10.1.1.198';
```

```
returnValue = mXINGYING_Initialize(szServerAddress);
```

(2)、Get Data Descriptions

```
DataDescriptions = mXINGYING_GetDataDescriptions();
```

DataDescriptions note:

DataDescriptions.nDataDescriptions ----- DataDescriptions

DataDescriptions.arrDataDescriptions(dsIndex).type ----- Description information type;

1---Descriptor_MarkerSetEx; 2---Descriptor_MarkerSet; 3---Descriptor_RigidBody;

4---Descriptor_Skeleton; 5---Descriptor_ForcePlate; 6---Descriptor_Param

DataDescriptions.arrDataDescriptions(dsIndex).MarkerSetDescription.szName--- Markerset name in description information

DataDescriptions.arrDataDescriptions(dsIndex).MarkerSetDescription.nMarkers--- The number of points contained in the Markerset in the description information

DataDescriptions.arrDataDescriptions(dsIndex).MarkerSetDescription.szMarkerNames(markerIndex).szMarkerNames--- The names of the points contained in the Markerset in the description information

DataDescriptions.arrDataDescriptions(dsIndex).RigidBodyDescription.szName--- Rigid body name in description information

DataDescriptions.arrDataDescriptions(dsIndex).SkeletonDescription.szName--- Skeleton name in description information

DataDescriptions.arrDataDescriptions(dsIndex).SkeletonDescription.nRigidBodies--- The number of bone segments contained in the skeleton in the description information

DataDescriptions.arrDataDescriptions(dsIndex).SkeletonDescription.RigidBodies(boneIndex).ID--- The ID of the boneIndex-th bone segment contained in the skeleton in the description information

DataDescriptions.arrDataDescriptions(dsIndex).SkeletonDescription.RigidBodies(boneIndex).szName--- The name of the boneIndexth bone segment contained in the skeleton in the description information

DataDescriptions.arrDataDescriptions(dsIndex).ForcePlateDescription.nChannels--- The number of channels of the force plate in the description information

DataDescriptions.arrDataDescriptions(dsIndex).ForcePlateDescription.szChannelNames(channelIdx).szChannelNames--- The name of the channelIdxth channel of the force plate in the description information

(3)、Get data information (note: need to be used correspondingly with (5))

data = mXINGYING_GetLastFrameOfMocapData();

data information analysis:

data.iFrame----- Data frame number

data.Timecode----- The time code information of the data requires decoded with(4)

data.TimecodeSubframe----- The time code information of the data requires to be decoded with (4)

data.iTimeStamp----- Data timestamp information

data.nMarkerSets--- Number of Markersets of data

data.MocapData(i).szName--- The name of the i-th Markerset of the data

data.MocapData(i).nMarkers--- The number of Markers contained in the i-th Markerset of the data

data.MocapData(i).Markers(i_Marker*4-3)--- The ID of the i_Marker-th point in the i-th Markerset of the data

The Z value of the i_Marker point contained in the i-th Markerset of the data

data.MocapData(i).Markers(i_Marker*4-2)--- The X value of the i_Marker point contained in the i-th Markerset of the data

data.MocapData(i).Markers(i_Marker*4-1)--- The Y value of the i_Marker point contained in the i-th Markerset of the data

data.MocapData(i).Markers(i_Marker*4)--- The Z value of the i_Marker point contained in the i-th Markerset of the data

data.nRigidBodies--- The number of rigid bodies in the data

data.RigidBodies(i).ID--- The ID of the i-th rigid body of the data

data.RigidBodies(i).x--- The X value of the i-th rigid body of the data

data.RigidBody(i).y--- The Y value of the i-th rigid body of the data
data.RigidBody(i).z--- The Z value of the i-th rigid body of the data
data.RigidBody(i).qx--- The rotation information quaternion Qx of the i-th rigid body of the data
data.RigidBody(i).qy--- The rotation information quaternion Qy of the i-th rigid body of the data
data.RigidBody(i).qz--- The rotation information quaternion Qz of the i-th rigid body of the data
data.RigidBody(i).qw--- The rotation information quaternion Qw of the i-th rigid body of the data

ContinuousEulerDEGXYZ= Quaternion2ContinuousEuler(LastFrameEulerDEGXYZ(i,:),
[data.RigidBody(i).qx,data.RigidBody(i).qy,data.RigidBody(i).qz,data.RigidBody(i).qw]); ---
The rotation information Euler Angle of the i-th rigid body of the data

vel= CalculateVelocity(m_FPS, squeeze(m_RigidBody_velaccCache(1,i,:)), FrameFactor); ---
The Velocity information of the i-th rigid body of the data

acc= CalculateAcceleration(m_FPS, squeeze(m_RigidBody_velaccCache(1,i,:)), FrameFactor);
--- The Acceleration information of the i-th rigid body of the data

data.RigidBody(i).nMarkers--- The number of Markers contained in the i-th rigid body of the data
data.RigidBody(i).MarkerIDs(iMarker)--- The ID of the i-th Marker contained in the i-th rigid body of the data
data.RigidBody(i).Markers(iMarker*4-2)--- The X value of the i-th Marker contained in the i-th rigid body of the data
data.RigidBody(i).Markers(iMarker*4-1)--- The Y value of the i-th Marker contained in the i-th rigid body of the data
data.RigidBody(i).Markers(iMarker*4)--- The Z value of the i-th Marker contained in the i-th rigid body of the data

data.nSkeletons--- The number of data skeletons
data.Skeletons(i).skeletonID--- The ID of the i-th skeleton of the data
data.Skeletons(i).nRigidBody--- The number of bone segments contained in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).ID--- The ID of the j-th bone segment in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).x--- The X value of the j-th bone segment in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).y--- The Y value of the j-th bone segment in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).z--- The Z value of the j-th bone segment in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).qx--- The rotation information quaternion Qx of the j-th bone segment in the i-th skeleton of the data
data.Skeletons(i).RigidBodyData(j).qy--- The rotation information quaternion Qy of the j-th bone

segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).qz--- The rotation information quaternion Qz of the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).qw--- The rotation information quaternion Qw of the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).nMarkers--- The number of Markers contained in the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).MarkerIDs(iMarker)--- The ID of the i-th Marker contained in the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).Markers(iMarker*4-2)--- The X value of the i-th Marker contained in the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).Markers(iMarker*4-1)--- The Y value of the i-th Marker contained in the j-th bone segment in the i-th skeleton of the data

data.Skeletons(i).RigidBodyData(j).Markers(iMarker*4)--- The Z value of the i-th Marker contained in the j-th bone segment in the i-th skeleton of the data

data.nOtherMarkers--- The number of unnamed markers in the data

data.OtherMarkers(iMarker*4-3)--- The ID of the unnamed Marker in the iMarker-th of the data

data.OtherMarkers(iMarker*4-2)--- The X value of the iMarker unnamed Marker of the data

data.OtherMarkers(iMarker*4-1)--- The Y value of the iMarker unnamed Marker of the data

data.OtherMarkers(iMarker*4) --- The Z value of the iMarker unnamed Marker of the data

data.nAnalogdatas--- Number of analog channels of data

data.Analogdata(iAnalogdatas)--- The data of the i-th analog channel of the data

data.nLabeledMarkers--- The number of all named points of the data

data.LabeledMarkers(iLabeledMarkers).ID--- The ID of the named point in the iLabeledMarkers-th of the data

data.LabeledMarkers(iLabeledMarkers).x--- The X value of the iLabeledMarkers-th named point of the data

data.LabeledMarkers(iLabeledMarkers).y--- The Y value of the iLabeledMarkers-th named point of the data

data.LabeledMarkers(iLabeledMarkers).z--- The Z value of the iLabeledMarkers-th named point of the data

data.LabeledMarkers(iLabeledMarkers).size--- The size of the iLabeledMarkers-th named point of the data

(4)、Time information decoding

[hour, minute, second, frame, subframe] =

mXINGYING_DecodeTimecode(data.Timecode,data.TimecodeSubframe);

(5)、Release data information memory (note: To be used in correspondence with (3))

mXINGYING_FreeFrame(data)

(6)、To disconnect from the motion capture system, add the code at the end
`returnValue2 = mXINGYING_Uninitialize();`

4. Data description

- (1)、The coordinate system is a right-handed system.
- (2)、For Markers that have been defined in the Markerset, if points are lost or cannot be recognized due to software operation problems, Marker occlusion, etc., the X, Y, and Z coordinate values will be filled in as 9999999.000000.