

Kinect Mocap Animator

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Kinect Mocap Animator v2.0

This guide assumes your workflow will be to create a single Unity project for doing motion capture for all animation clips, and that those clips will be imported into your game projects as needed. But if you need more than one project for mocap (perhaps because you need to use model skeletons of significantly different proportions), then the steps in this section must be repeated for each of those projects.

- In Unity, create a new 3D Unity project.
- In the Package manager, find “Kinect MoCap Animator” by 'RF Solutions'. Download and import it.
- Make these settings in File > Build Settings:
 - Platform = PC, Mac & Linux Standalone
 - Target platform = Windows
- Open and run the KinectMocapAnimator-scene under the Project tab > Assets.

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Prepare a body recording

The Mocap Animator works with body recordings only. It doesn't work with live sensors and live sensor data. To get a body recording you need one of the following Unity assets:

Azure Kinect Examples for Unity

The K4A-asset works with Azure Kinect, Kinect-v2 and RealSense sensors. It includes more than 35 demo scenes. One of them is the 'BodyDataRecorderDemo' in 'KinectDemos/RecorderDemo' -folder. It can be used to create the body recordings, needed by the Mocap Animator. More information about the K4A-asset is available [here](#). To create a body recording, please do as follows:

1. Open and run the 'BodyDataRecorderDemo' in 'KinectDemos/RecorderDemo' -folder.
2. Make sure the sensor is running and your body motions are visible on the screen.
3. Press the 'Start Recorder'-button to start the recording,
4. Press 'Stop Recorder or Player'-button to stop the recorder.
5. If you want to see what has been recorded, press 'Start Player'-button to play the recording.

Kinect-v2 with MS-SDK

The K2-asset works with Kinect-v2, Kinect-v1 and NuiTrack-supported sensors. It includes more than 30 demo scenes. One of them is the 'KinectRecorderDemo' in 'KinectDemos/RecorderDemo' -folder. It can be used to create the body recordings, needed by the Mocap Animator. More information about the K2-asset is available [here](#). To create a body recording, please do as follows:

1. Open and run the 'KinectRecorderDemo' in 'KinectDemos/RecorderDemo' -folder.
2. Make sure the sensor is running and your body motions are visible on the screen.
3. Say 'Record' or press the Space-key to start the recording,
4. Say 'Stop' or press the Space-key again to stop the recorder.
5. If you want to see what has been recorded, say 'Play' or press the Ctrl-key to play the recording.

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Capture animation clip

Here is what to do, to capture the user motion from the body recording and save it as animation clip in a FBX-model:

1. Copy the previously created body recording file to the root folder of the Mocap Animator project.
2. Open and run the KinectMocapAnimator-scene.
3. Change the name of the body recording file or the user index, if needed.
4. Press 'Start Mocap' to start capturing the body recording from the beginning.
5. After the mo-cap stops, the 'Recorded' model will start playing the newly created animation clip.

After the Mocap Animator finishes, you can find the recorded animation in the 'Recorded'-model under

'KinectMocapFbx/Models'-folder.

The steps above describe the simplest use-case. There are many options available:

- If you'd like only to play the body recording (without saving any animation), please disable the 'with player'-checkbox. Then press the Play-button, to start playing the body recording.
- If you need to save only part of the body recording as animation, disable 'with player'-checkbox and press the Play-button. Then press the 'Start Mocap'-button, when you want to start saving the animation clip. Press it again to stop the animation capture. If you don't press it, the mo-cap will stop automatically, when the end of body recording is reached.
- It is possible to save multiple animation clips in the same output FBX-model. To do it, select the MocapRecorder-game object in Hierarchy, and on its KinectFbxRecorder-component enable 'Load save file if exists'-setting to use the output FBX-file as input. Then change the 'Animation name'-setting as well, to record the new animation clip under a different name.
- If you'd like to save each animation clip into a different output FBX-file, enable the 'Timestamp save file name'-setting of the KinectFbxController-component in the scene. It will append a timestamp to the name of the output file.
- If you'd like to reduce the number of the saved key frames, you can set the value of 'Max frames per second'-setting of the KinectFbxController-component in the scene.

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Retarget the animation to other models

Please note, you don't have to replace the models in the Mocap Animator with your own, to utilize the recorded animation clips. Instead, you can utilize the retargeting capabilities of Unity's animation system Mecanim. To do it, please follow these steps:

1. Copy the model with the recorded animation clip (by default this is: Assets/Models/Recorded.fbx) to the Unity project, where you plan to utilize the animation. Feel free to rename it, as you like.
2. Select the copied model in the Unity editor. Then switch to the Rig-tab of its Import settings, and make it Humanoid.
3. Go to the Animations-tab of the Import settings, to see the animations. Feel free to make changes, like setting the Start & End frames, Loop time, etc. Don't forget to apply these changes.
4. Open the scene where your model should play the animation clip, and select it in Hierarchy. Make sure its Rig in its Import settings is Humanoid, as well.
5. Please also make sure the model has an Animator-component, and there is animator controller assigned to it. If there isn't one, please create a new animator controller in the Assets-window, and assign it to the Controller-setting of the Animator-component.
6. Open the Animator-window (menu Window / Animation / Animator).
7. Drag the recorded animation clip (or the entire model) and drop it into the Animator window. The recorded animation will show up in the Animator's state machine.

That's it. Now run the scene and check, if your model plays the recorded animation clip correctly. This way you can retarget the saved animation clip(s) to any other humanoid model in your project.

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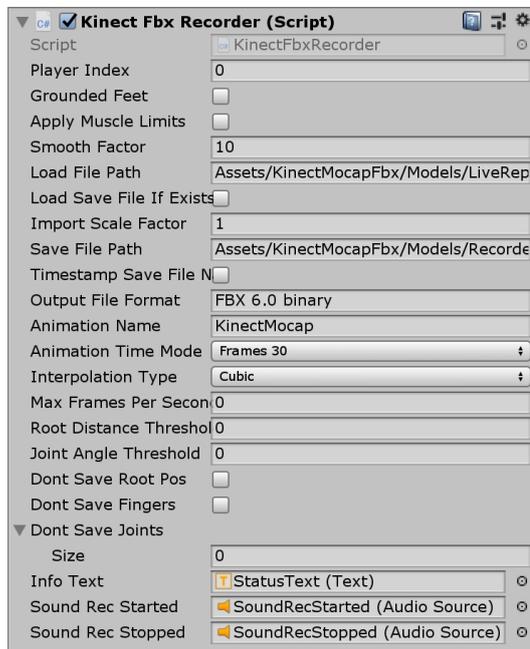
How to change the models

If anyway you'd like to use your own humanoid model, you can do it as follows:

1. Copy your FBX-model into the 'Assets/KinectMocapFbx/Models'-folder. Optionally, rename the file as 'LiveReplay.fbx'.
2. Duplicate the model (copy and paste it in the same folder). Optionally, rename the 2nd model as 'Recorded.fbx'.
3. Find and select your new model in the Assets-window of Unity editor. Go to the Rig-tab of its Import settings, and make it Humanoid.
4. Select the MocapRecorder-object in Hierarchy. Make sure the 'Load file path' and 'Save file path'-settings are pointing to the FBX-files you copied to the Models-folder.

KinectFbxRecorder-Component Settings

KinectFbxRecorder is component of the MocapRecorder-game object in KinectMocapAnimator-scene. It is responsible for saving the user motion from the body recording as an animation clip in the output fbx-model (by default this model is: Assets/Models/Recorded.fbx).



Property:	Description:
Player Index	Index of the player, tracked by this component. 0 means the 1st player, 1 - the 2nd one, 2 - the 3rd one, etc.
Grounded Feet	Whether the avatar's feet must stick to the ground.
Apply Muscle Limits	Whether to apply the humanoid muscle limits to the avatar bones, or not.
Smooth Factor	Smooth factor used for avatar movements and joint rotations.
Load File Path	Path to the fbx file, used to load the 'live-replay' avatar model.
Load Save File If Exists	Whether to load the model from save-to path, if the save-file exists.
Import Scale Factor	Unity scale factor of the loaded fbx model.
Save File Path	Path to the fbx file, used to save the 'recorded' model and animation.
Timestamp Save File Name	Whether to append timestamp to the save file name. If this setting is enabled, each recording will be saved to a separate fbx-file.
Output File Format	Output file format. Leave empty for the default format.
Animation Name	Name of the recorded animation.
Animation Time Mode	Time mode for the recorded animation - determines the frame rate.
Interpolation Type	Key-point interpolation type for the recorded animation.
Max Frames Per Second	Maximum FPS (frame rate) for saving animation frames. The time between frames will be minimum 1/FPS seconds.
Root Distance Threshold	Root position is saved, if the distance to its last saved position is greater than the threshold (in meters).
Joint Angle Threshold	Joint orientation is saved, when the angle between its current and its last saved orientation is greater than the threshold (in degrees).
Don't Save Root Pos	Whether to not include the root position into the recorded animation.
Don't Save Fingers	Whether to not include the finger orientations into the recorded animation.
Don't Save Joints	List of joints that will be excluded from the recorded animation.
Info Text	UI-Text to display information messages.
Sound Rec Started	Sound to play when the recording is started.
Sound Rec Stopped	Sound to play when the recording is stopped.

