Motion AI Manual v1.0.0

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Introduction

Motion AI: The Complete Motion Capture Solution for Blender

Motion AI is designed to streamline your motion capture workflow, offering powerful features that integrate seamlessly within Blender.

Key Features:

Fully Integrated: Perform all your motion capture tasks within Blender—no need for additional software.

Versatile Compatibility: Effortlessly supports motion capture for any T-pose or A-pose armature.

Advanced Technology: Leverage cutting-edge AI and post-processing optimization for highly accurate motion capture results.

Minimal Workflow: Capture motion in as few as 10 clicks, with a simplified, user-friendly interface.

Quick Learning Curve: Get up and running in just 3 minutes with intuitive controls.

Time Efficient: Save up to 80% of the time usually spent setting up poses.

Features Overview

Self-research Armature Transfer Algorithm

Effortlessly supports motion capture for any T-pose or A-pose armature.

Advanced AI Technology for Motion Capture

Leverage cutting-edge AI and post-processing optimization for highly accurate motion capture results.

Rig IK/FK System

Play with your animations like a pro! Our IK/FK control system help you tune the motion capture result quickly.

Self-research Fine-Tuning Algorithm

Two fine-tuning algorithms are provided to deal with the problems of toe and foot optimization.

Bake Animation

Once the animation is baked, you can easily share your motion capture results with your collaborators.

Remapping

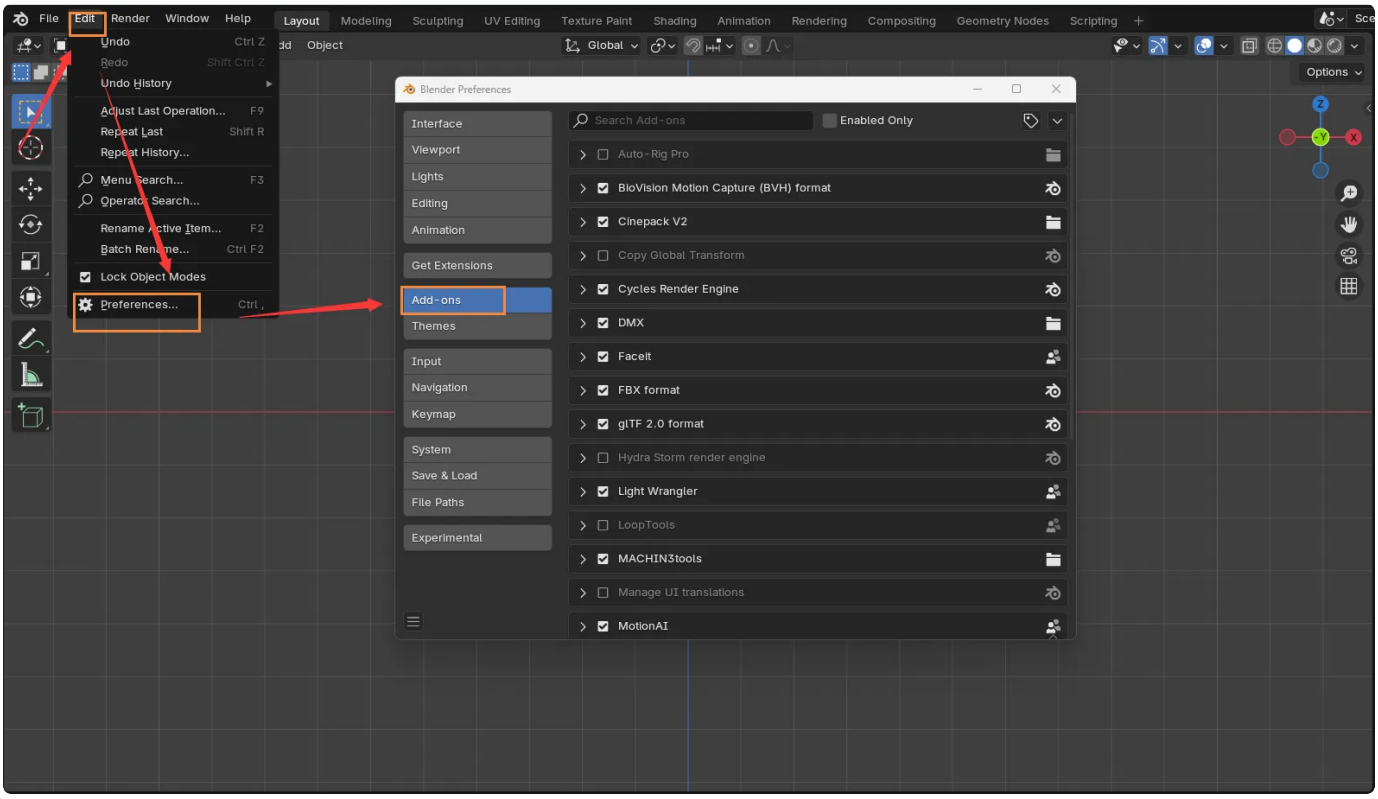
Easily copy animations from other motion capture sources to your own models.

Download the Plugin

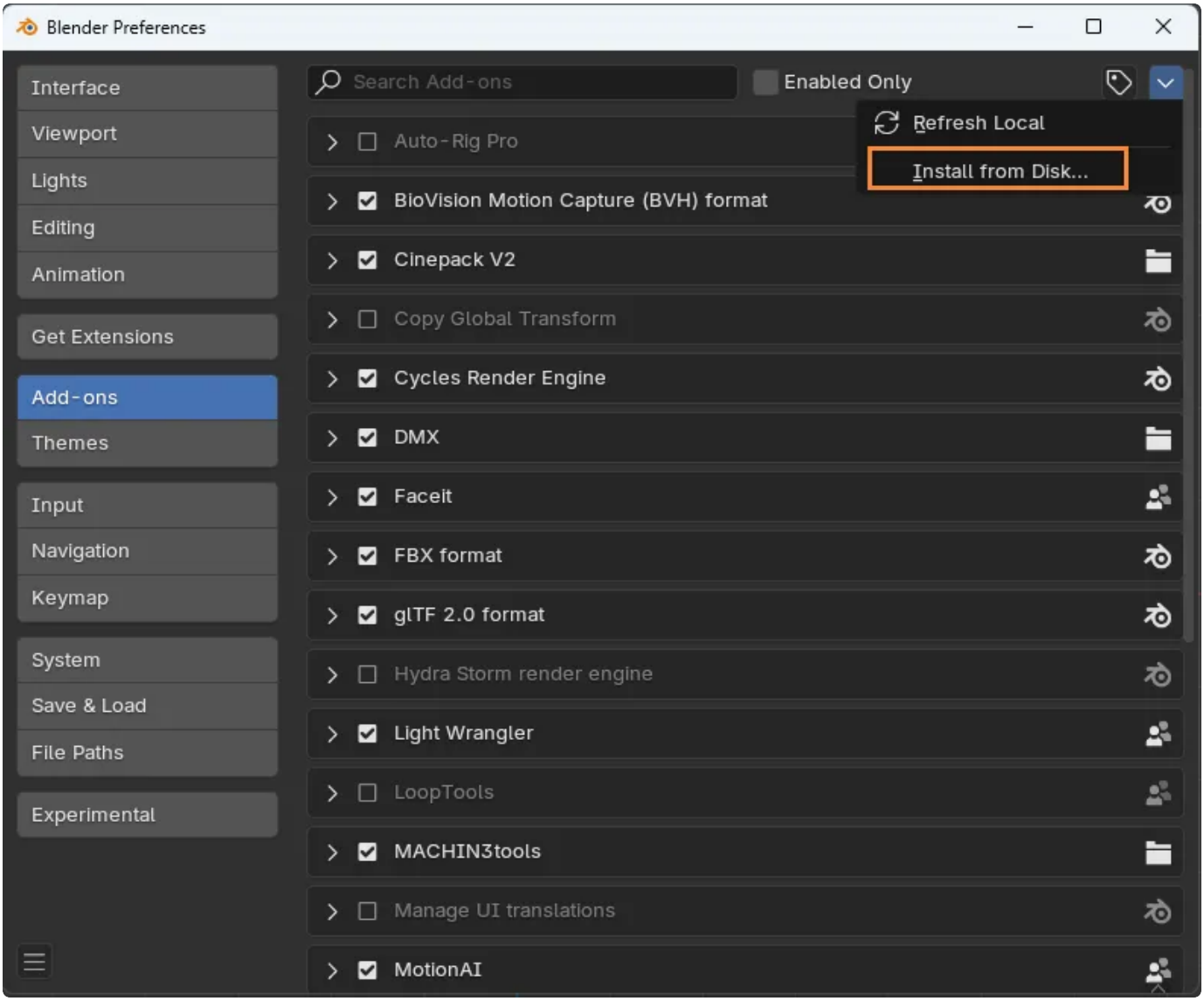
Obtain the Motion AI from the Blender Market.

Install Motion AI

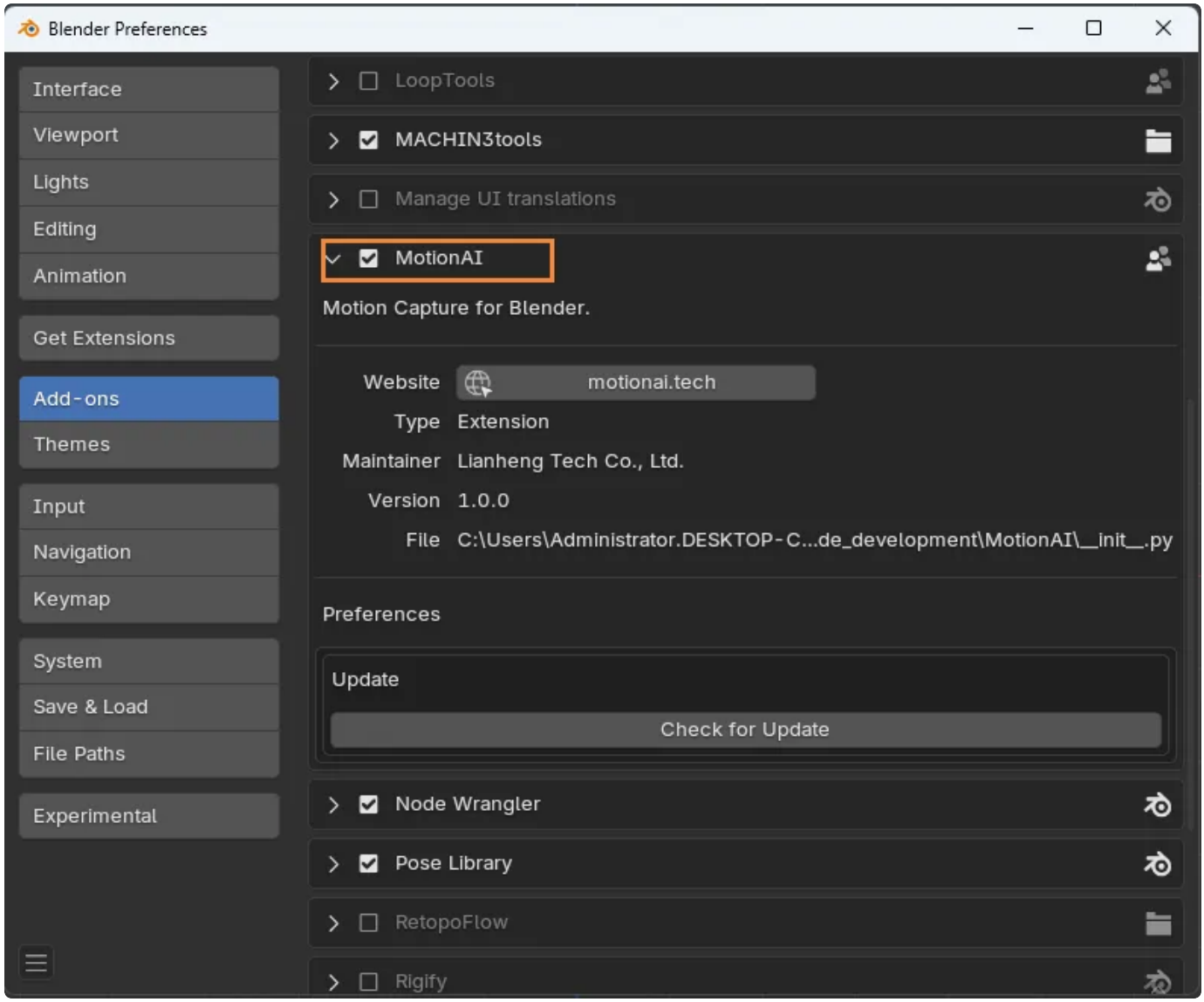
1. Open Blender -> Edit > Preferences > Add-ons.



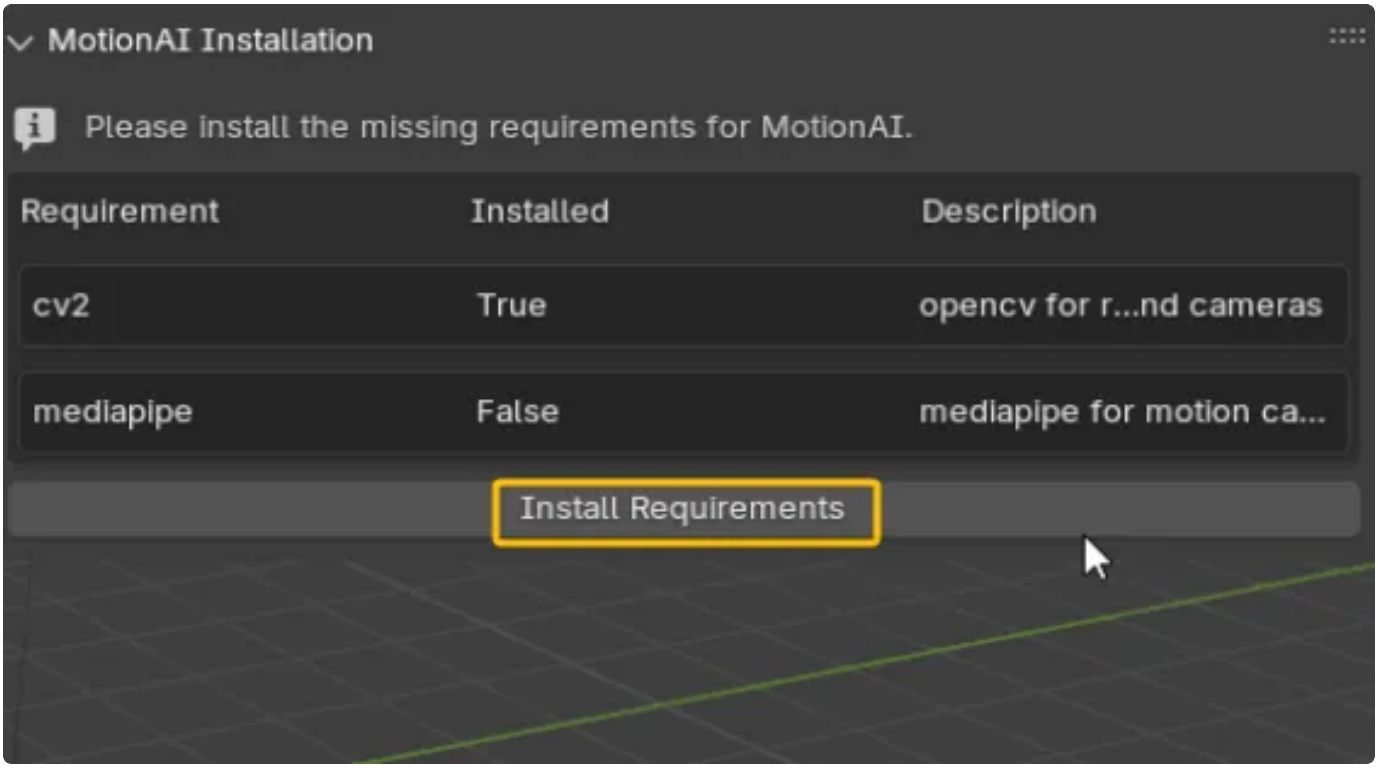
2. Install from Disk –> Select the MotionAI.zip file



3. Enable the Add–on

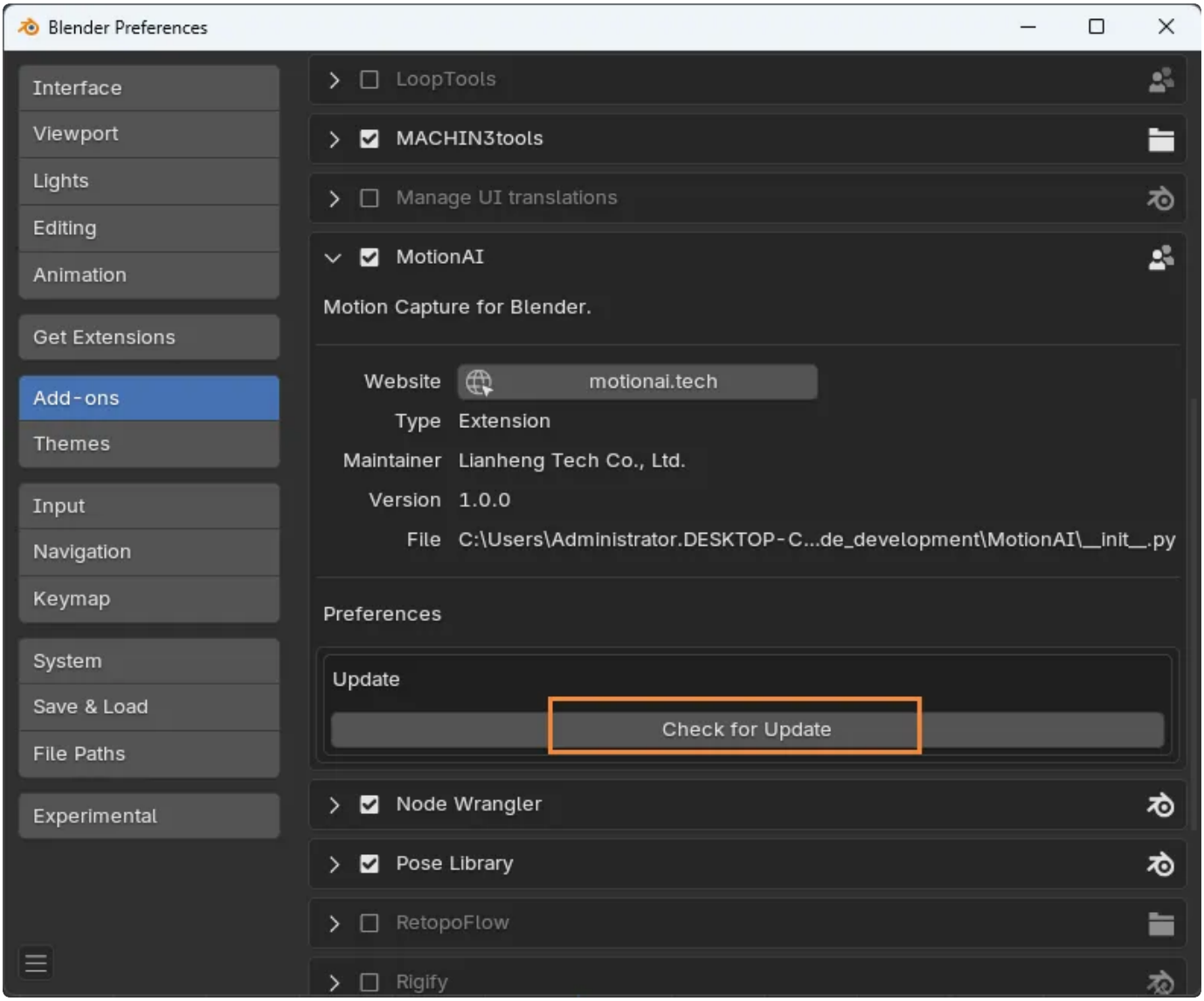


- 4. Open the Motion AI Panel and Install Dependencies
- 4.1. Press N on your keyboard or click the small arrow on the right side of the Blender interface to open the sidebar.
- 4.2. In the sidebar, find and select the Motion AI panel.
- 4.3. Motion AI will perform an environment check to ensure the dependency is set up correctly. If any required modules are missing, you will see an option to Install them. Click on this to automatically download and install the necessary requirements.



Update Motion AI

- 1. Open Blender –> Edit > Preferences > Add–ons.
- 2. Find Motion AI –> Check for Update



Quick Start – Create New Capture

WorkFlow：Create New Capture

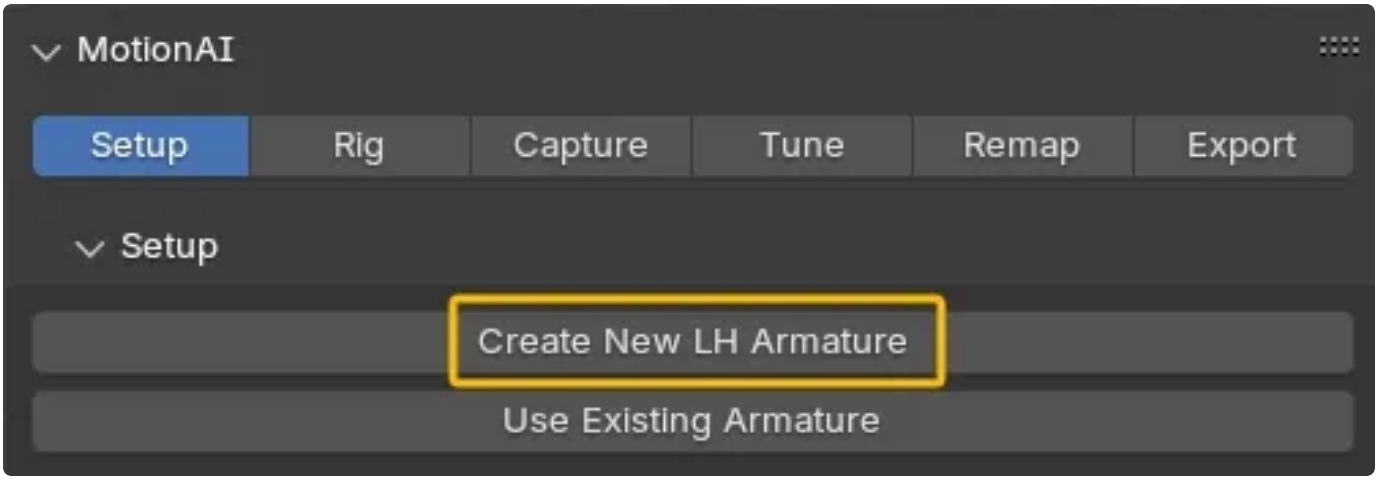
To start using Motion AI, follow the steps below:

Setup

Motion AI provides the motion capture for the LH armature or your own armature.

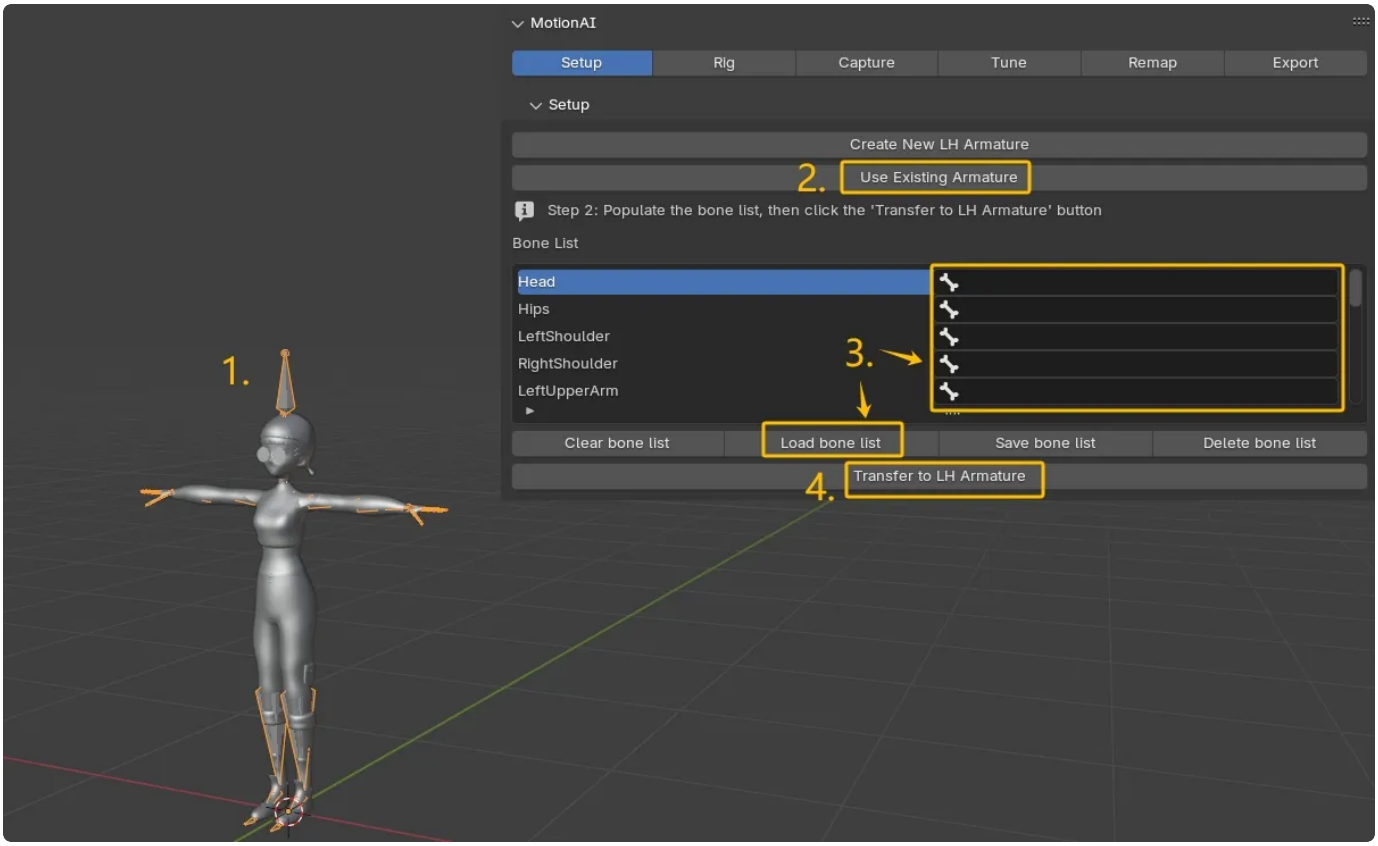
a. **Create New LH Armature**

If you need a standard LH armature, simply click the “**Create New LH Armature**” button.



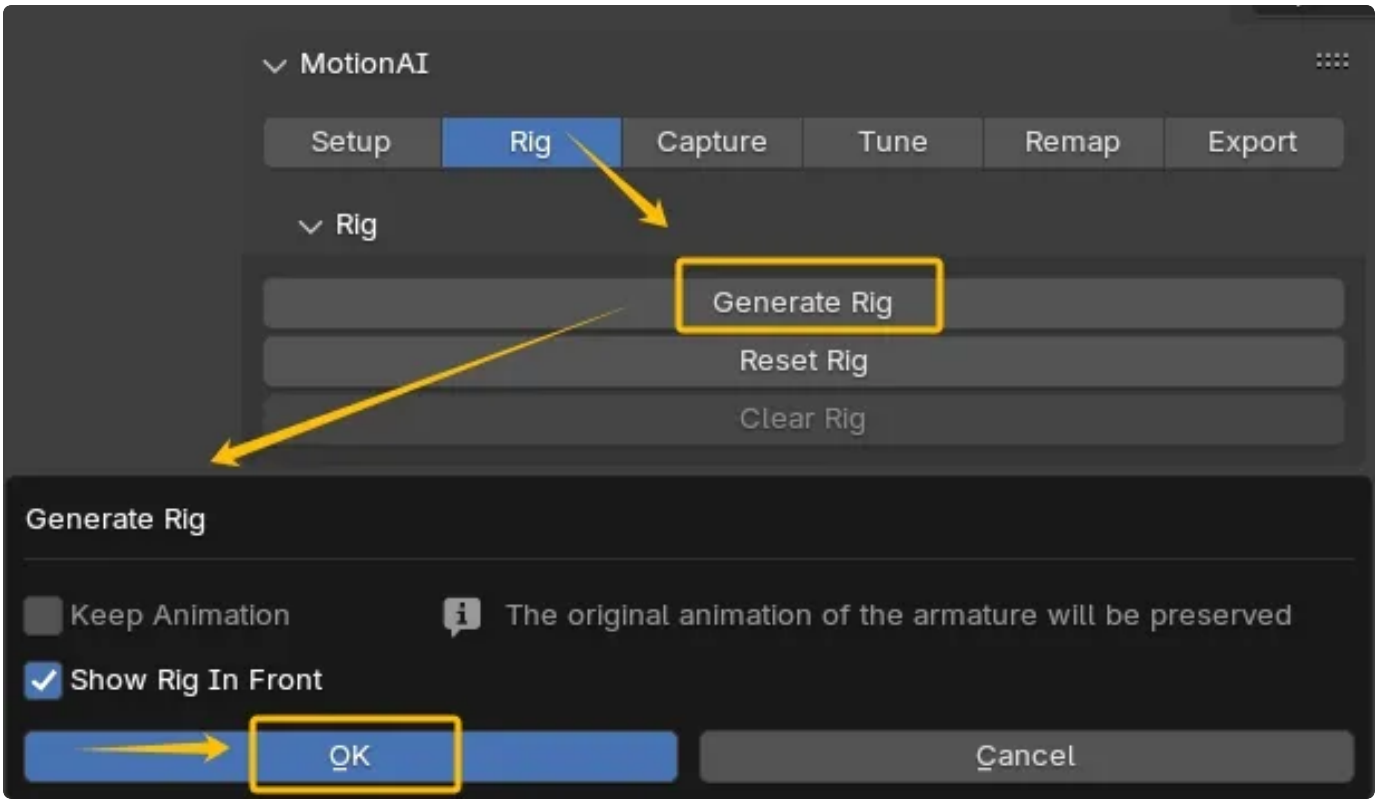
b. **Use Existing Armature**

1. Properly import your own armature using Blender Import Backend.
2. Select your armature and go to setup tap.
3. Click the **“Use Existing Armature”** button.
4. If your armature follows the standard of mixamo, arp, ue5 mannequin etc., you can click the "**Load Bone List**" Button and load the corresponding bone relation. If not, please fill the bone list manually.
5. Click the "**Transfer to LH Armature**"



Rig

1. In **Object Mode**, select the armature you want to generate the rig for.
2. Click the **“Generate Rig”** button to create the rig controller for your armature. **PLEASE** uncheck the keep animation.

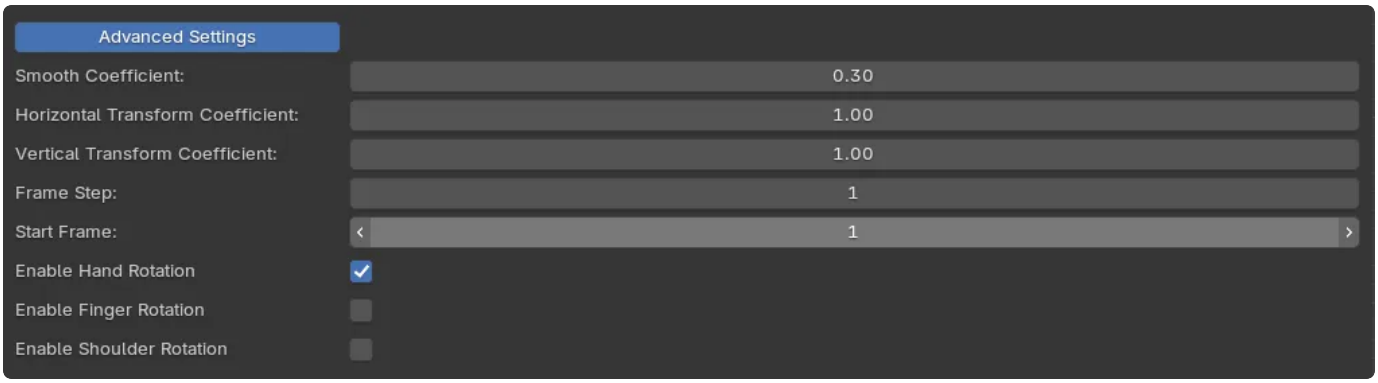


Capture

1. Select the input type: video, camera or image
2. Select the file path.
3. Select the capture type: pose or face. For face capture, please make sure the armature has the ARKit shapekeys.
4. Select the target armature.
5. Adjust advanced settings. Please view parameter explanation.
6. Click "Start" Button.

Parameter Explanation

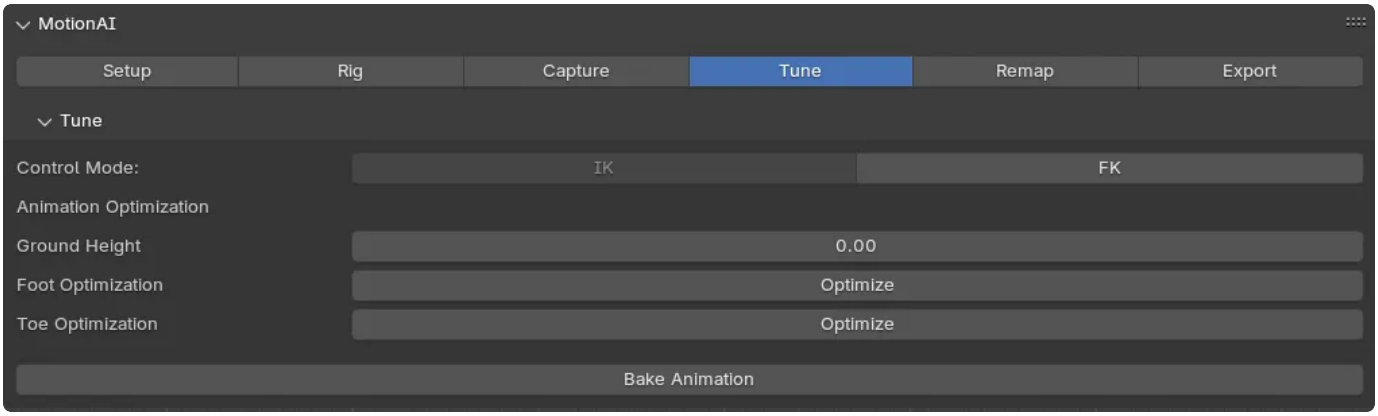
- Input Type: Motion AI supports input formats including video, camera, and image.
- File Path: The file path of the input.
- Capture Type: Pose or Face.
- Smooth Coefficient: The larger the smooth coefficient, the smoother the animation will be. Recommend Value: 0.3 – 0.8.
- Horizontal Transform Coefficient: The larger the horizontal transform coefficient, the greater the horizontal transformation of the animation will be. This is typically used to control movement along the x–axis.
- Vertical Transform Coefficient: The larger the vertical transform coefficient, the greater the vertical transformation of the animation will be. This is typically used to control movement along the z–axis.
- Frame Step: the interval of inserted keyframes. Recommend Values: 2 or 4.
- Start Frame: The start frame for inserting keyframes.
- Enable Hand Rotation: Currently, the leading AI motion capture technology has limitations in accurately capturing hand movements. However, you can enable the hand capture feature as an experimental function to test its capabilities.
- Enable Shoulder Rotation: Not every armature can achieve optimal results in shoulder rotation due to variations in geometry. You can enable this feature to evaluate its performance.
- Target Armature: The armature you want to apply motion capture
- Record Keyframe: whether record animation.



Tune

1. Tune the animation using IK/FK control system. It usually involves spending time on manual finger tuning.

2. Set a reasonable ground height to optimize foot and toe automatically.
3. Click "optimize" button for foot and toe.
4. Bake animation.

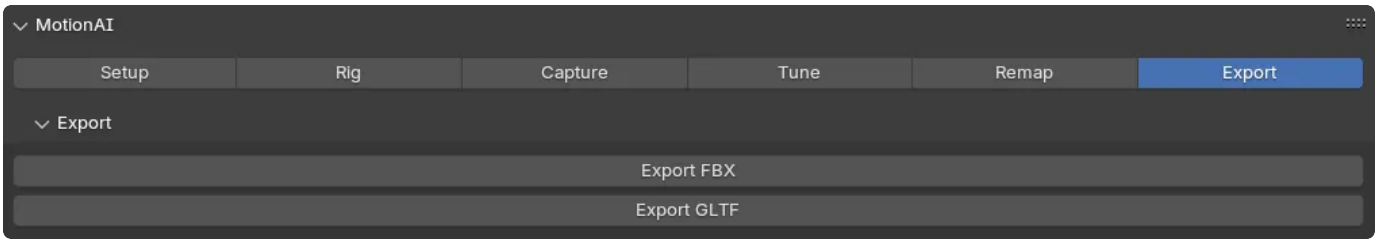


Parameter Explanation

- Ground Height: The z-axis value of the ground

Export

1. Select the armature and the mesh you want to export.
2. Click "Export FBX" or "Export GLTF" button.



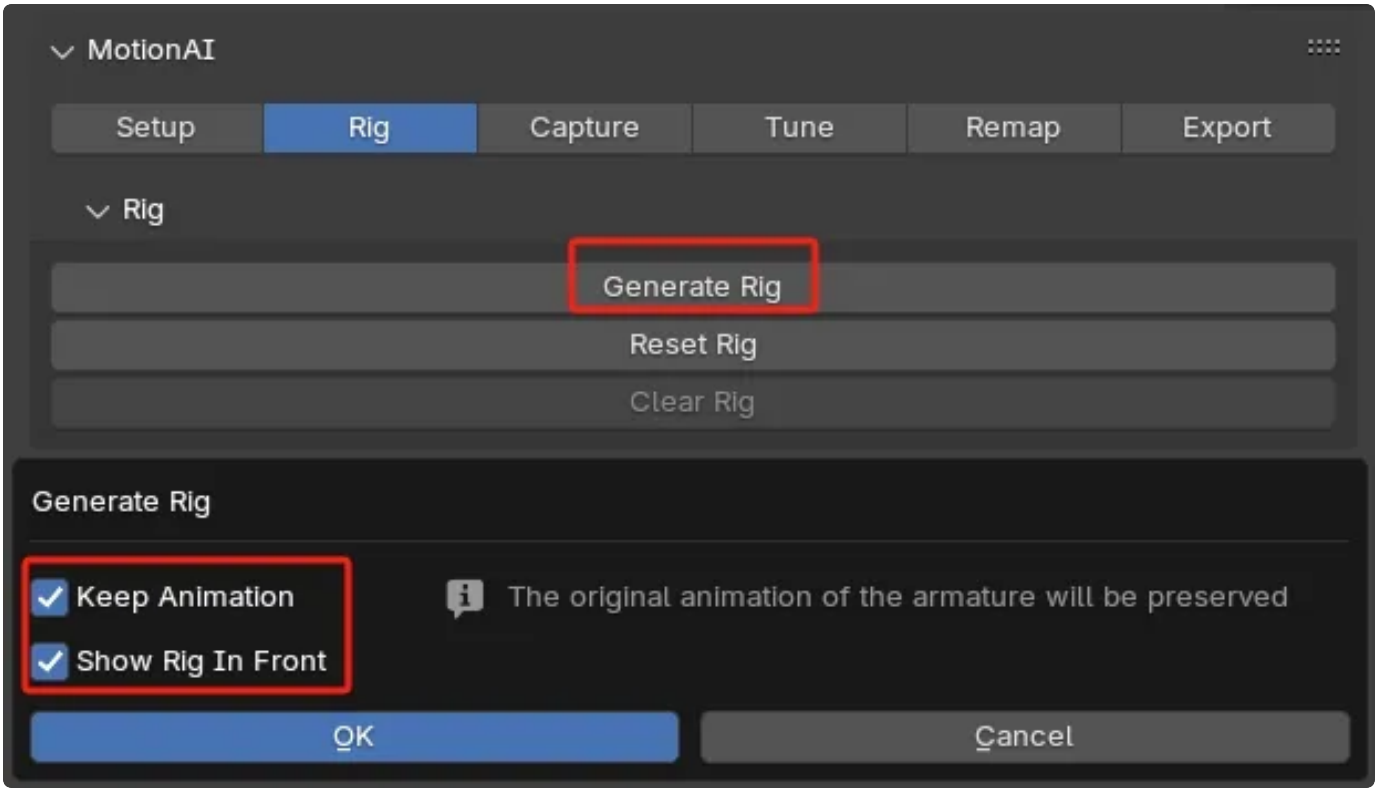
Quick Start – Fine Tune Old Capture Result

WorkFlow : Fine Tune Old Capture Result

To start using Motion AI, follow the steps below:

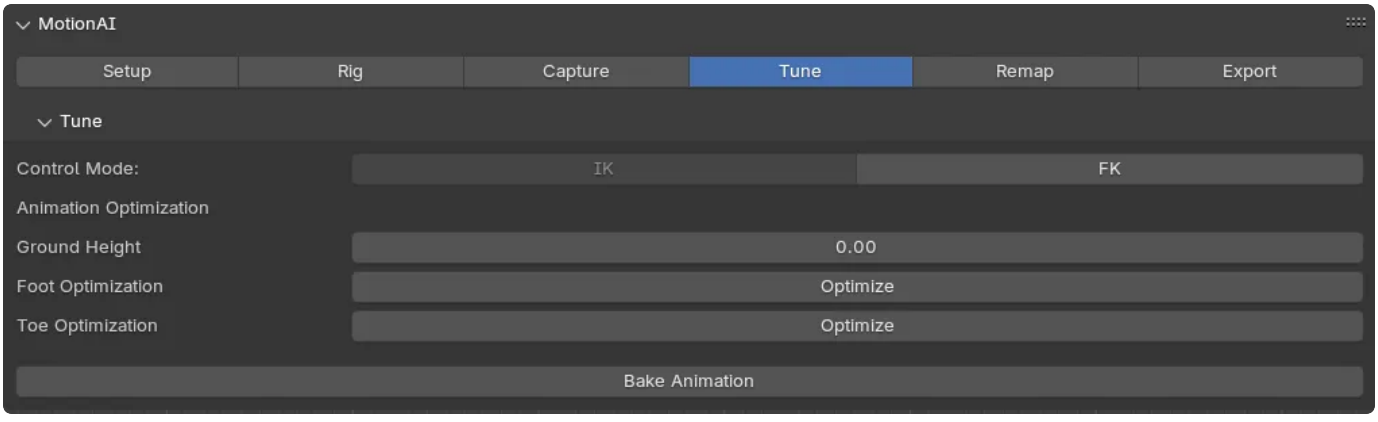
Rig

1. In **Object Mode**, select the armature you want to generate the rig for.
2. Click the **“Generate Rig”** button to create the rig controller for your armature. **PLEASE** check the keep animation.



Tune

1. Tune the animation using IK/FK control system. It usually involves spending time on manual finger tuning.
2. Set a reasonable ground height to optimize foot and toe automatically.
3. Click "optimize" button for foot and toe.
4. Bake animation.

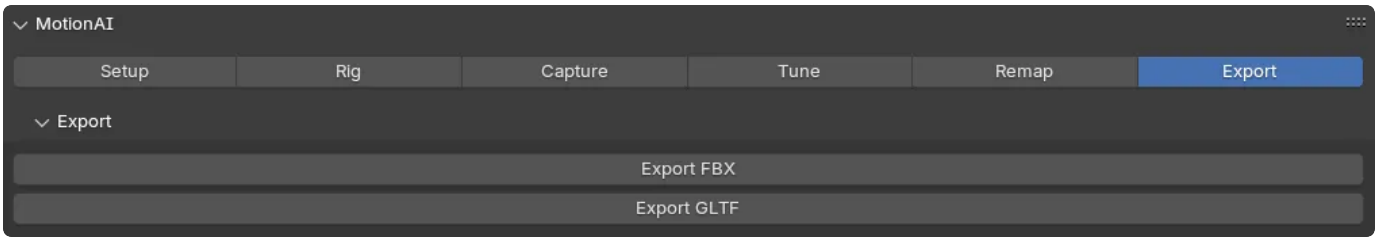


Parameter Explanation

- Ground Height: The z-axis value of the ground

Export

1. Select the armature and the mesh you want to export.
2. Click "Export FBX" or "Export GLTF" button.



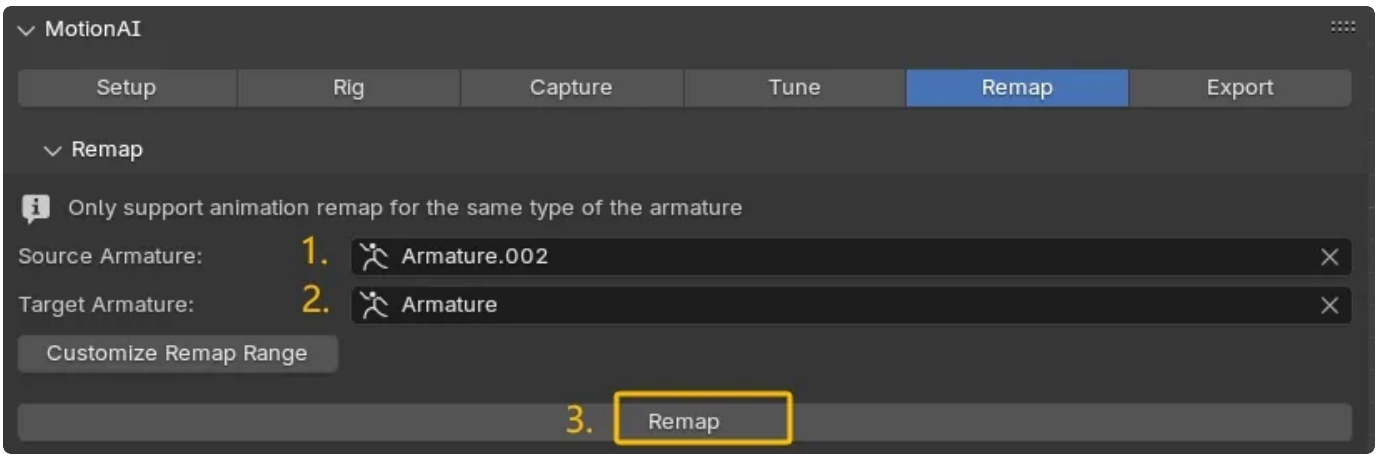
Quick Start – Remap Animation

WorkFlow : Remap Animation

To start using Motion AI, follow the steps below:

Remap

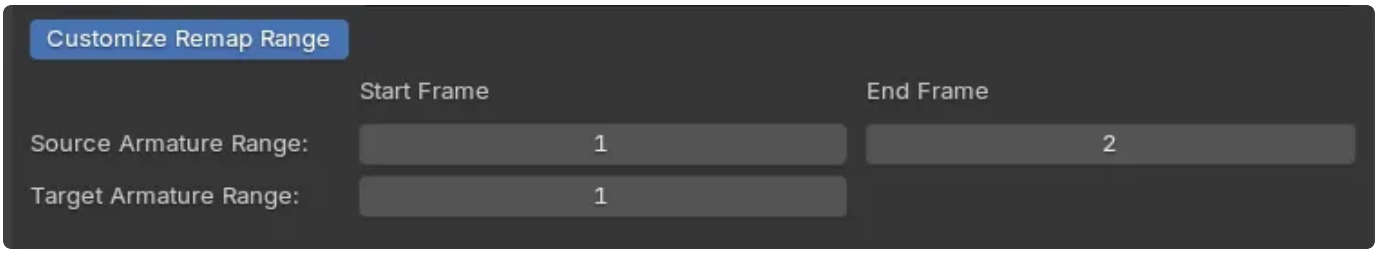
1. Select the source armature : Select the armature that contains the original animation data.
2. Select the target armature : Choose the armature you want to transfer the animation to.
3. Click the "**Remap**" button.



Parameter Explanation

- Source Armature Range : Defines the frame range to remap. Set the "**Start Frame**" and "End Frame" to specify the range (e.g., frame 5 to frame 90).
- Target Armature Range : The "**Start Frame**" in the target armature sets where the keyframes will begin. You can set this to any frame for flexibility.

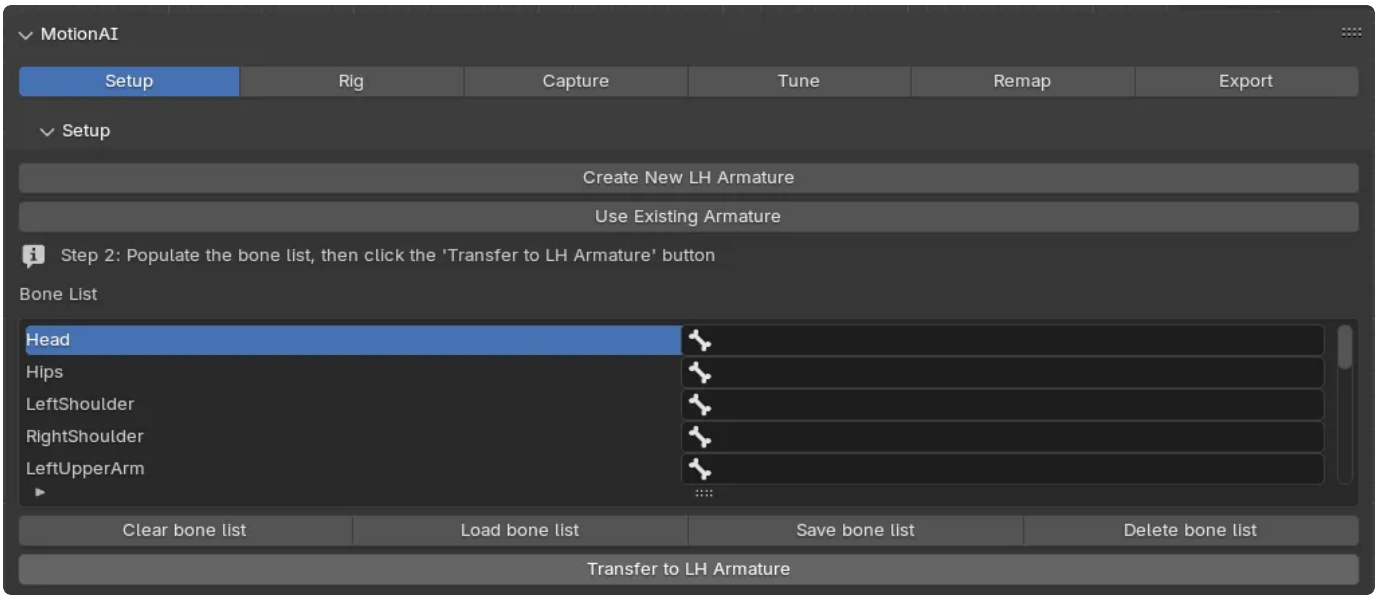
- Smooth Coefficient: The larger the smooth coefficient, the smoother the animation will be. Recommend Value: 0.3 – 0.8.



Panel Overviews and Usage Instructions

Setup Panel

The Setup panel ensures that your armature adheres to the LH standard, whether you are creating a new LH armature or transferring your existing armature.



Function

1. Create a New LH Armature
    - Click "**Create New LH Armature**" button.
2. Convert an Existing Armature to LH standard
    - Click "**Use Existing Armature**" button.
    - Select your armature.
    - Fill in the blanks of the bone list. Load the bone list from presets or manually fill in the blanks. You can manage your preset bone lists using the "**Save Bone List**" and "**Delete**

Bone List" buttons.

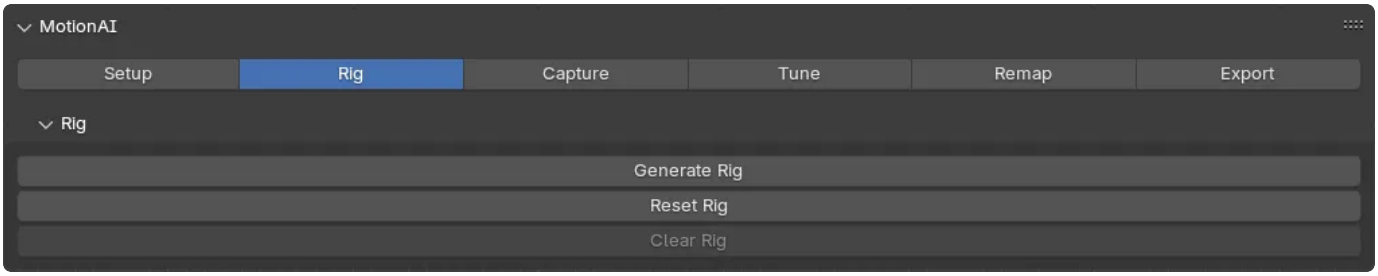
- Click "Transfer to LH Armature" Button. V1.0.0 only support T-pose or A-pose armature. More improvements will be included in future versions.

Tips

1. For Using an Existing Armature
   - If you frequently use certain bone setups, it's recommended to save the bone list for quick loading in the future.
   - Make sure your model is adjusted to a T-pose or A-pose to avoid pose issues later.
   - If you frequently use certain bone setups, it's recommended to save the bone list for quick loading in the future.

Rig Panel

The Rig panel handles the control system of the armature.



Function

1. Generate Rig
   - Select your armature.
   - Click "**Generate Rig**" button.
2. Reset Rig
   - Select your armature.
   - Click "**Reset Rig**" button.
3. Clear Rig
   - If your armature has LH rig system, select your armature.
   - click "**Clear Rig**" Button

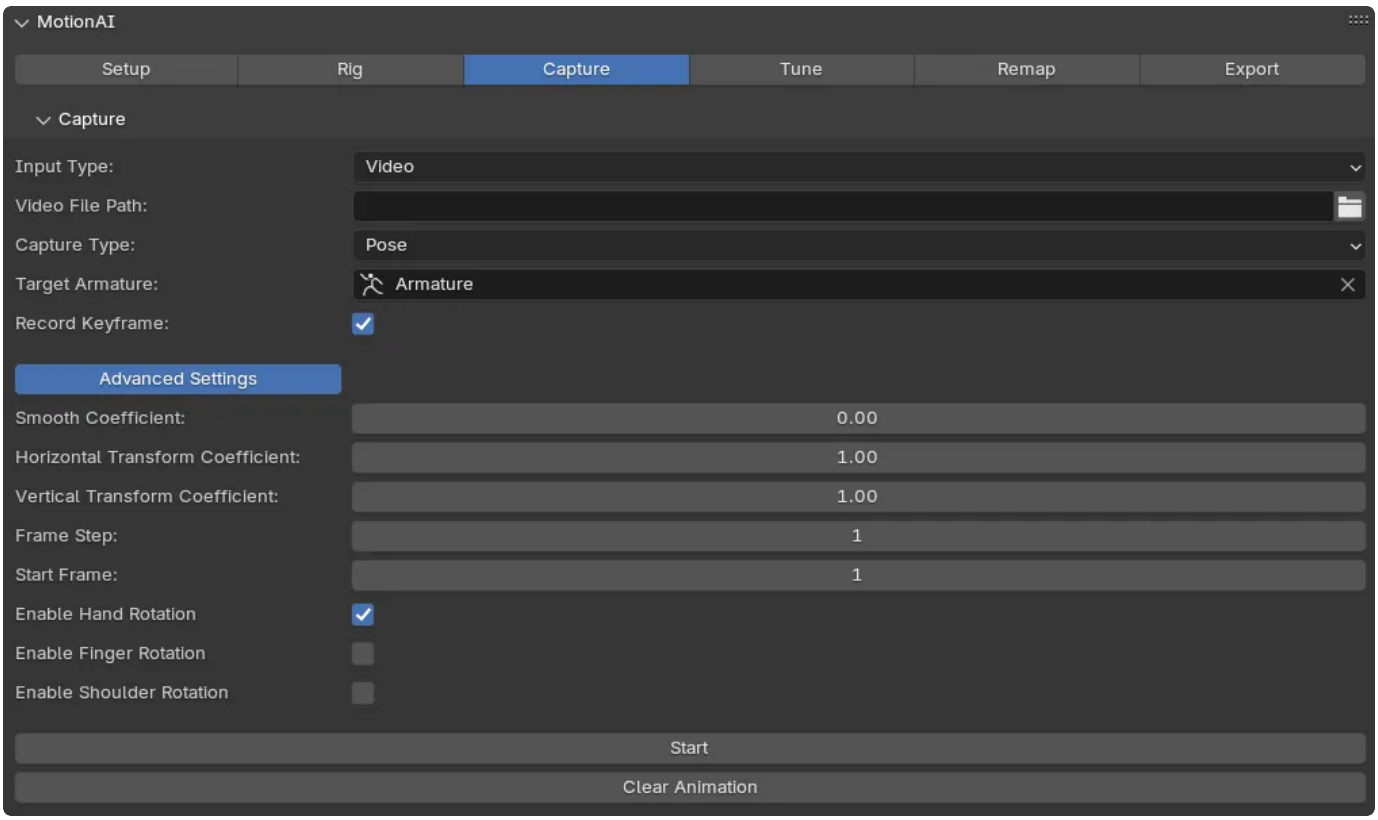
Tips

1. For Clear Rig
   - Clearing the rig will remove all LH rig-related data. Use this function carefully, and

ensure you have a backup of your armature before clearing.

Capture Panel

The Capture panel contains the core function—motion capture. Advanced parameters can be adjusted to achieve better capture results.



Function

1. capture
    - Fill in the parameters and click the "**Start**" button. Parameter explanations are listed below. Parameters in the advanced settings are optional.
        - Input Type: Motion AI supports input formats including video, camera, and image.
        - File Path: The file path of the input.
        - Capture Type: Pose or Face. For face capture, please make sure the armature has the ARKit shapekeys.
        - Smooth Coefficient: The larger the smooth coefficient, the smoother the animation will be. Recommend Value: 0.3 – 0.8.
        - Horizontal Transform Coefficient: The larger the horizontal transform coefficient, the greater the horizontal transformation of the animation will be. This is typically used to control movement along the x-axis.

- Vertical Transform Coefficient: The larger the vertical transform coefficient, the greater the vertical transformation of the animation will be. This is typically used to control movement along the z-axis.
- Frame Step: the interval of inserted keyframes. Recommend Values: 2 or 4.
- Start Frame: The start frame for inserting keyframes.
- Enable Hand Rotation: Currently, the leading AI motion capture technology has limitations in accurately capturing hand movements. However, you can enable the hand capture feature as an experimental function to test its capabilities.
- Enable Shoulder Rotation: Not every armature can achieve optimal results in shoulder rotation due to variations in geometry. You can enable this feature to evaluate its performance.
- Target Armature: The armature you want to apply motion capture
- Record Keyframe: whether record animation.

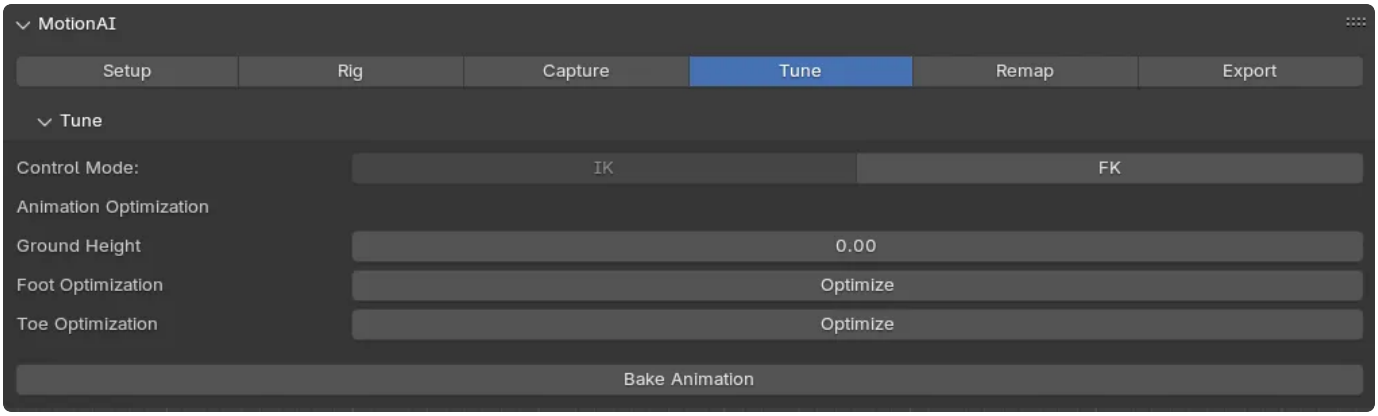
2. Clear animation: clear the animation of the target armature.

Tips

1. For Capture
   - Make sure the input format (video, camera, or image) is compatible with the selected Motion AI capture type for smooth processing.
   - These features are experimental. If the results are unsatisfactory, try adjusting your armature or testing with different models for improved accuracy.
2. For Clear animation
   - Before clearing animations, save your project to avoid losing any progress that might need to be restored later.

Tune Panel

The Tune Panel assists in optimizing the capture results.



Function

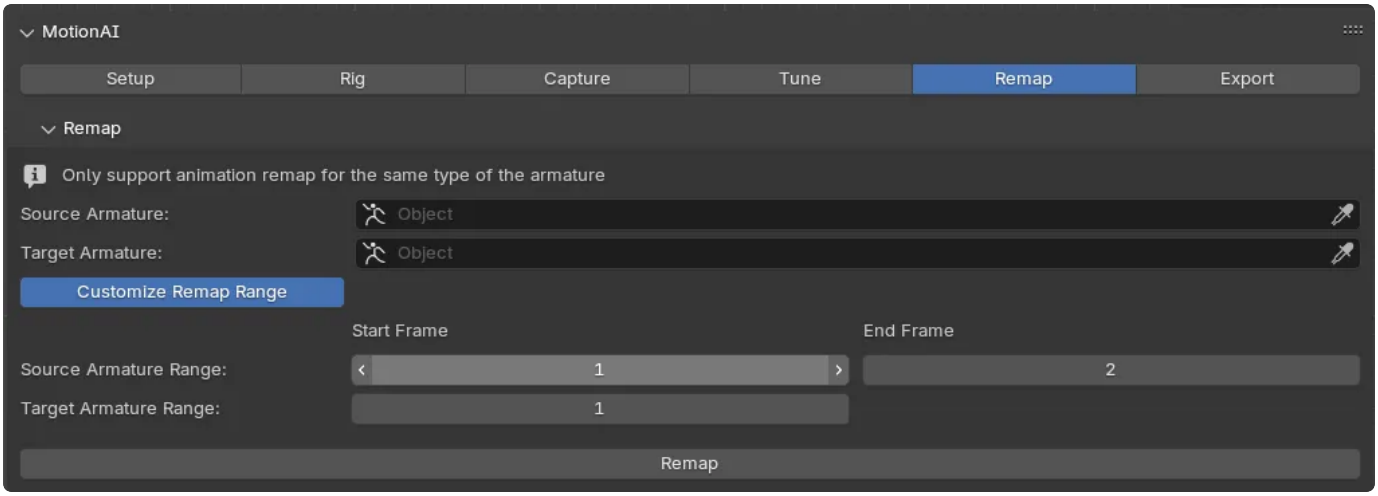
1. Change control mode
    - select your armature.
    - click **IK** or **FK** in control mode to switch control system.
2. Foot and toe optimization
    - select your armature
    - Set a reasonable ground height to automatically optimize the positioning of the foot and toe. The ground height should correspond to the z-axis value of the ground.
3. Bake animation
    - select your target armature.
    - click bake animation

Tips

1. For foot and toe optimization
    - Ensure the ground height is accurately set according to the z-axis value of your scene's ground for best results in foot placement.

Remap Panel

The Remap panel facilitates copying animations from existing capture results.



Function

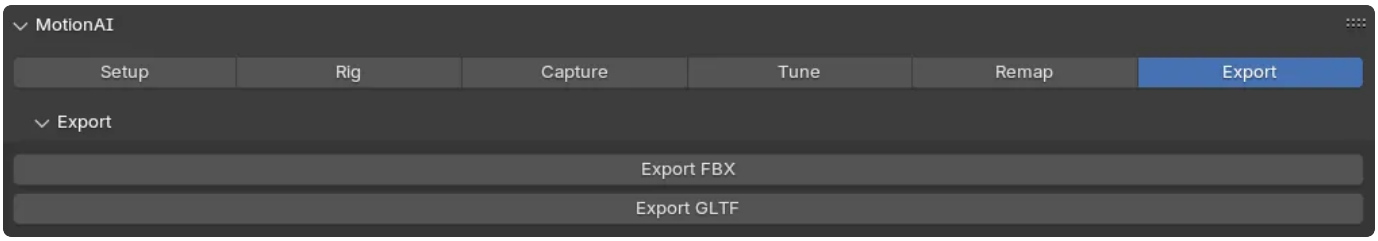
1. remap
    - Select the source armature that contains the existing animation.
    - Select the target armature to which you want to copy the animation from the source armature
    - (Optional) Click "Customize Remap Range" button to set the remapping range.
    - Click "Remap" button.

Tips

1. For remap
    - Ensure that both the source and target armatures have compatible bone structures for optimal remapping results. Incompatible structures may lead to unexpected animations.
    - Use the “Customize Remap Range” feature to focus on specific sections of the animation, allowing for more controlled adjustments during the remapping process.

Export Panel

The Remap panel facilitates the export of animations to FBX or GLTF formats.



Function

1. Export FBX

- Select your armature and the corresponding mesh
- Click "Export FBX" button.

2. Export GLTF
    - Select your armature and the corresponding mesh
    - Click "Export GLTF" button.

Troubleshooting

A Journey Through Challenges

Inaccurate Capture Data

Imagine setting up your camera to capture a perfect performance, but when you review the footage, something feels off. To correct this, ensure your camera angle captures the action accurately and your lighting illuminates the scene evenly. Adjust the capture parameters, like tweaking the frame rate or sensitivity, to get the precise data you need.

Bone Matching Errors

Imagine a complex puzzle where the pieces just don't seem to fit—this is similar to encountering bone matching errors. Verify that the bone system you're using matches the captured data. If the pieces still don’t align, use manual adjustment tools to fine-tune the bone mapping until everything fits perfectly.

Plugin Crashes or Unresponsiveness

If you're on the verge of a breakthrough and your plugin crashes or becomes unresponsive, first ensure that both Blender and the plugin are up to date, as outdated versions could be causing the issue. If the problem continues, try uninstalling and reinstalling the plugin to give your setup a fresh start and resolve any underlying problems.