User manual

Hand Gesture Recorder is a utility that saves time on creating files for gesture detection of hand tracking in the Unity editor.

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Hand Gesture Recorder – user manual

Welcome!

Thank you for purchasing the hand gesture recorder!

This tool is an automatic process to create files used to detect your hand gestures in the editor. He performs actions for you that you should have done. He is responsible for creating the "Hand Shape" with the curve of the fingers and the "Hand Pose" with the reference directions along a dedicated axis.

To get the most out of this tool and its different options, please follow the instructions in this getting started guide.

About the Author

Passionate about developing interactive 3D projects, I studied 3D and object-oriented programming on Unity and Unreal Engine. After obtaining my Master's degree and a few years of professional experience, I decided to focus on creating practical tools to help developers in their creations.

If you are interested in my background and experiences, here are some useful links:

Artstation : https://quicklib.artstation.com

Linkedin : https://fr.linkedin.com/in/quentin-letren-160395119

Support

If you still need assistance after reading this getting started guide, please feel free to contact me for technical support at this email address : contact.quicklib@gmail.com

Set up

Before you start using the tool, check if you have the "XR Hands" package installed. To check, simply go to : "Window/Package Manager".
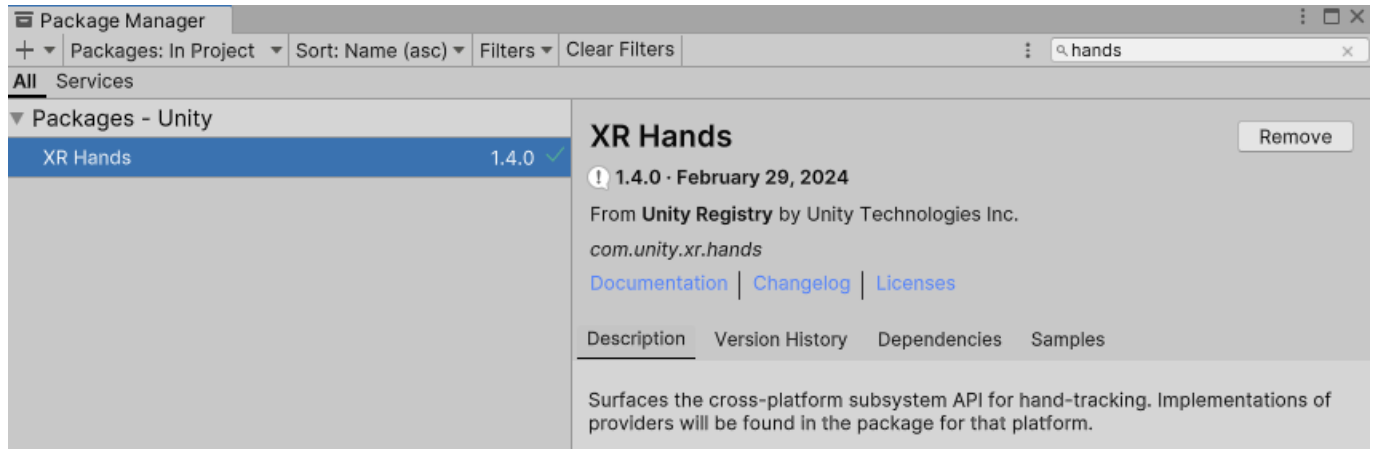
If this is not the case, you can follow the installation steps for this package below.

Installer le paquet « XR Hands »

In the package manager window, click on the "+" then select "Add package by name…". Enter the name "com.unity.xr.hands". The package will install directly.
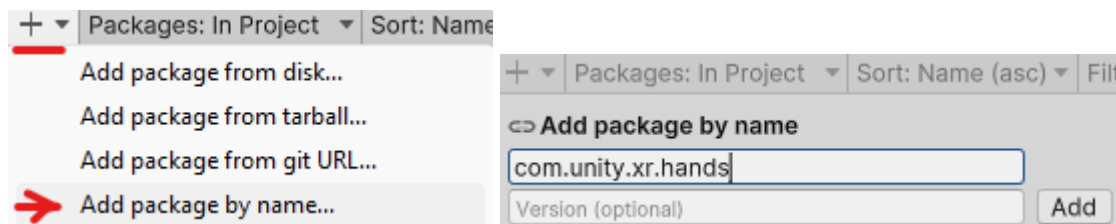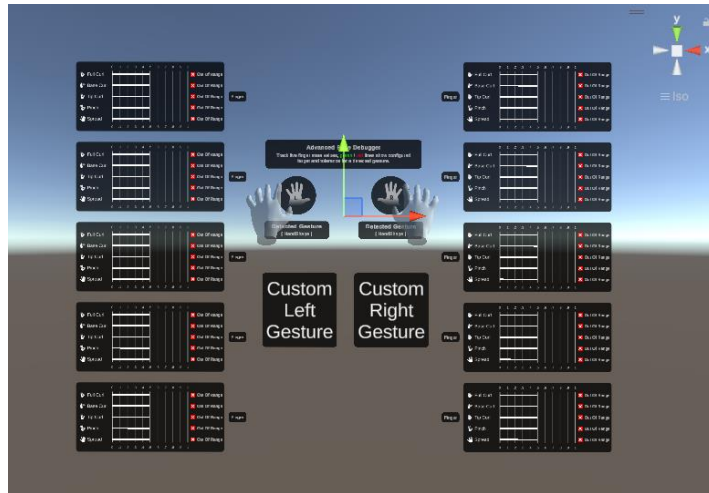

Record a hand gesture

1) Use the example scene

The example scene provided in the package is located in Assets/Quick Lib/Hand Gesture Recorder/Scene/HGR-DemoScene.unity.

This scene contains all the elements necessary to record and debug the gestures created.

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2) The XR Hand Gesture Recorder script

This script is used in the example scene. It contains several public variables to allow you simple customization:

- Keycode To Record: The keyboard key that will be used to record your gesture.
- Folder Path To Save: The path where your files will be created. It must start with the word "Assets" then add the rest of the path without a slash at the end (example: Assets/MyGestureFolder).
- Hand Gesture Name: The base name that your created files will have.
- Use Orientation Conditions: If the box is checked, a "Hand Pose" file will be additionally created to take into account the orientation of the hand, thumb and fingers.
- Handedness: The left or right hand to record.
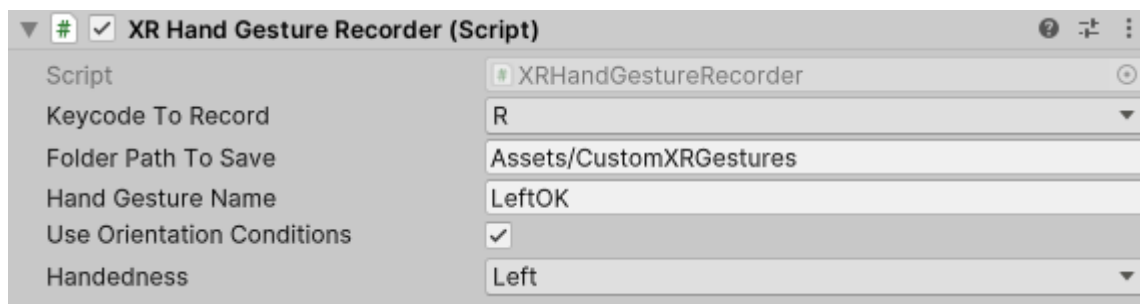
## 3) Real time recording

Once your headset is connected, launch the scene and check if both of your hands are detected and tracked.

According to the previous image, the keyboard key "R" is used to register the left hand gesture. All you need to do is make the desired gesture with your left hand and the right hand pressing the "R" key on the keyboard once.

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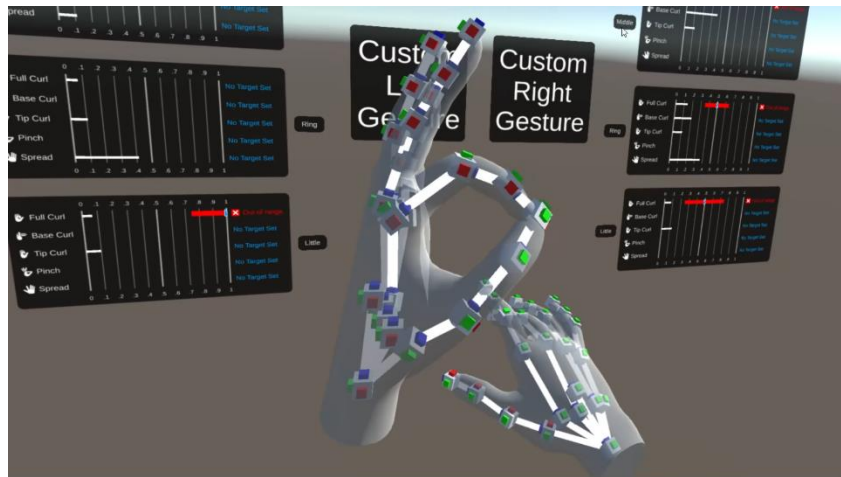
If the gesture recording well then the console displays these messages.
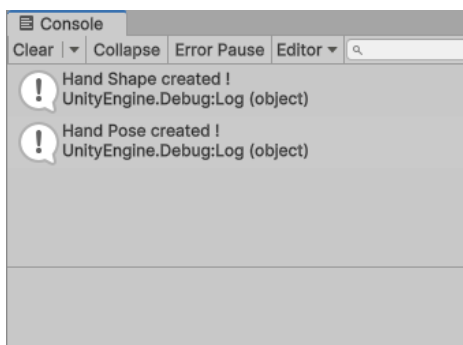
Results after recording a gesture

Exit the simulation. In the project, one or two new folders are created in the path that you specified in the "XR Hand Gesture Recorder" script.
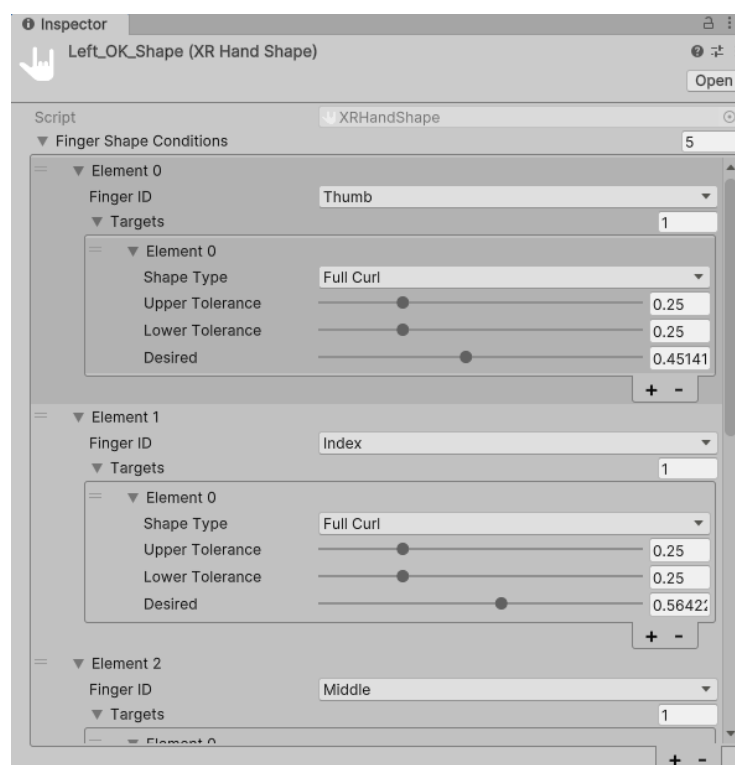

1) The Hand Shape file

In the "Hand Shapes" folder a file is created with the name given in the "XR Hand Gesture Recorder" script.

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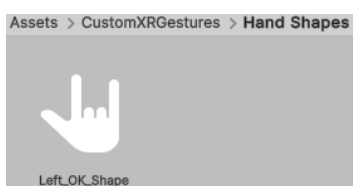
This file contains the list of conditions of the 5 fingers of the recorded hand. Each condition includes the total curvature of a finger. The low and high tolerance are automatically set to 0.25. To change this number, you can modify the private variables of the "XR Hand Gesture Recorder" script. The "Desired" slider represents the recorded finger curvature number.

2) Hand Pose file

This file is only created if you have checked the "Use Orientation Conditions" boolean. It is located in the "Hand Poses" folder with the name specified in the "XR Hand Gesture Recorder" script.


This file includes the "Hand Shape" created at the same time and all the necessary orientation conditions.

The orientation conditions are added and calculated like this:

- The palm of the hand in relation to the origin and the head,

- The extension of the thumb in relation to the origin and the head,

- The extension of the fingers (other than thumbs) in relation to the origin and the head.

If an element was missing, it was not necessary to detect your hand gesture. This case often happens when almost all of the fingers are not all aligned in the same direction.

At the moment, target management is not yet implemented.

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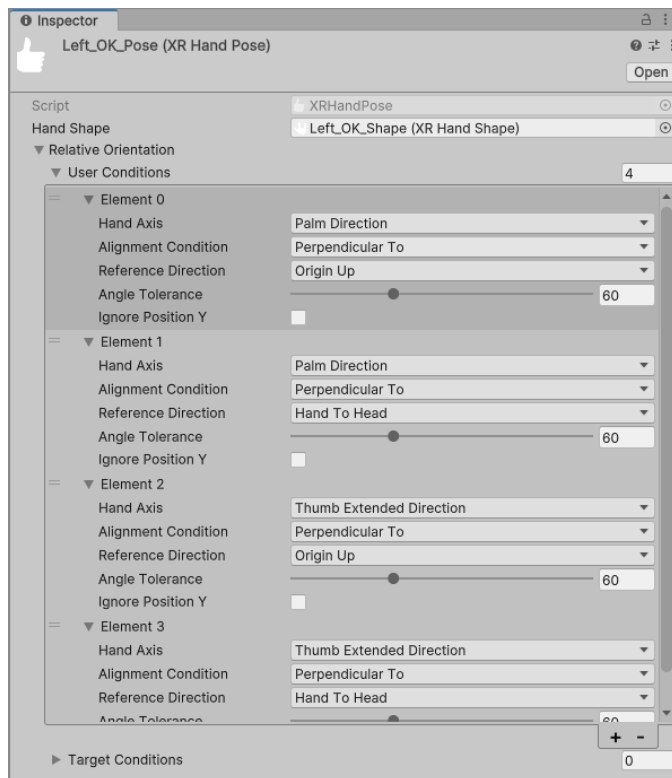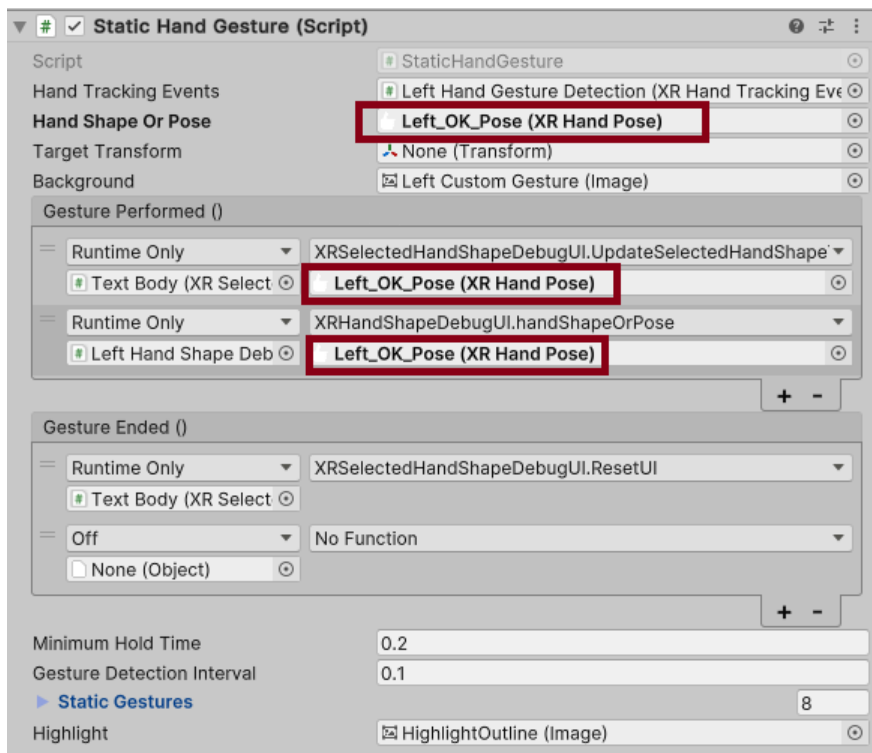
Test the recorded gesture

Unfortunately the gesture cannot be directly tested after recording. You must make sure to exit the simulation and then enter the files created in the scene like this (in bold):

    a. Select the "Left Custom Gesture" object if the recorded hand was the left, otherwise select the "Right Custom Gesture" object.
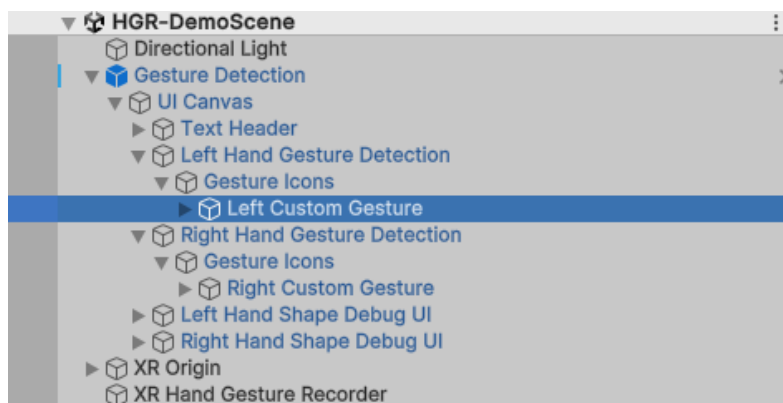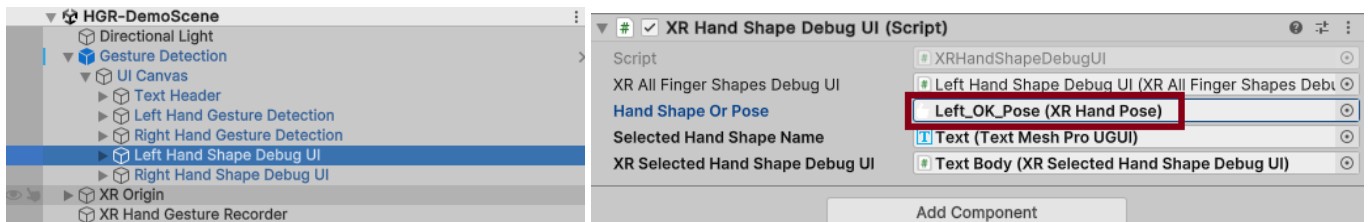

    b. In the inspector, enter in the "Static Hand Gesture" script:

-   Either the "Hand Shape" or "Hand Pose" file (if created) in the "Hand Shape Or Pose" variable.

-   In the "Gesture Performed ()" event, put in the arguments either the "Hand Shape" or "Hand Pose" file (if created).
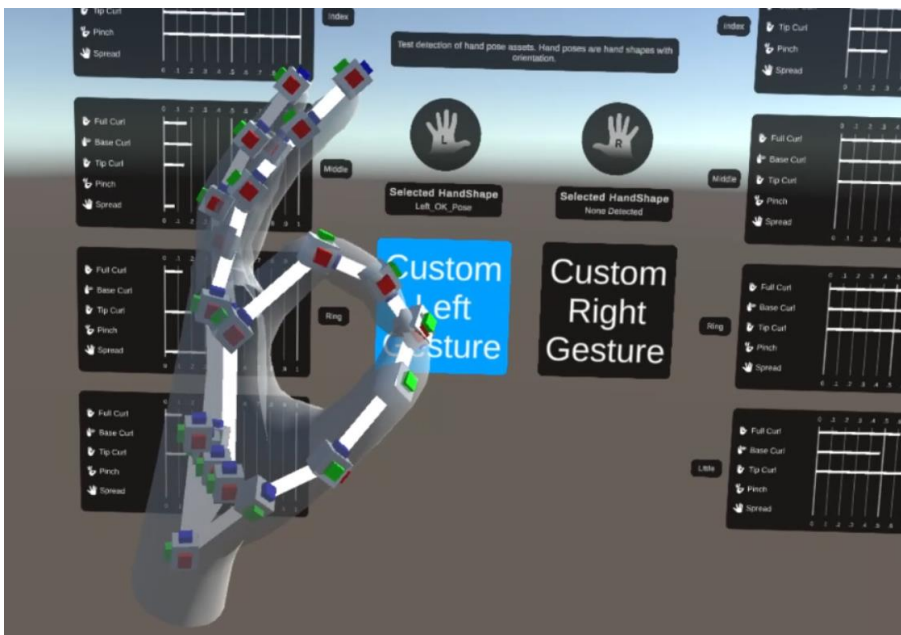
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c. Make sure you have entered your new "Hand Shape" or "Hand Pose" file in the "XR hand Shape Debug UI" script.

Start the simulation and once your hands are detected and tracked, perform the previously recorded and entered gesture. The gesture is detected when the interface turns blue.

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FAQ

1) User conditions missing in the Hand Pose file

The condition that could not appear is often finger extensions. This condition only appears if you have all fingers (not including the thumb) facing the same direction. If one of the four fingers is different then the condition does not appear.

If the condition not appearing is other than finger extensions then this means that during the orientation recording, the bone was at the limit of orientation detections. In this case try to repeat the gesture more pronounced in one direction or do not use a "Hand Pose" file.

2) How to modify the tolerance values in the script??

To modify the tolerance values, go to the "XRHandGestureRecorder" script then modify the private variables: upperTolerance (= 0.25f), lowerTolerance (= 0.25f), angleTolerance (= 60).

3) I don't want a "Hand Pose" file

If you do not want to detect the orientations of the bones for recording then simply uncheck the "Use Orientation Conditions" variable in the inspector for the "XR Hand Gesture Recorder" script.

4) My gesture is not detected

Check if you have correctly entered your files in the inspector (see the "Test the recorded gesture" section).

Also check that you have updated this tool as well as the Unity "XR Hands" package.

The risk of registration error (especially for orientation) may still exist even if it is minimal. This tool will be continually updated and tested with the most popular gestures as well as the latest versions of the Unity "XR Hands" package.

5) I cannot find the created files

Make sure your path is correctly entered in the "XR Hand Gesture Recorder" script for the Folder Path To Save variable.

The path must start with the word "Assets" then add the rest of the path without a slash at the end (example: Assets/MyGestureFolder).

6) PDF For any persistent or non-mentioned issues in this PDF

Make a screen print of your console and the "XR Hand Gesture Recorder" script.   You can send them to me by email, describing the gesture you tried to record (a photo would be ideal) as well as an explicit explanation of your problem.

Email address: contact.quicklib@gmail.com