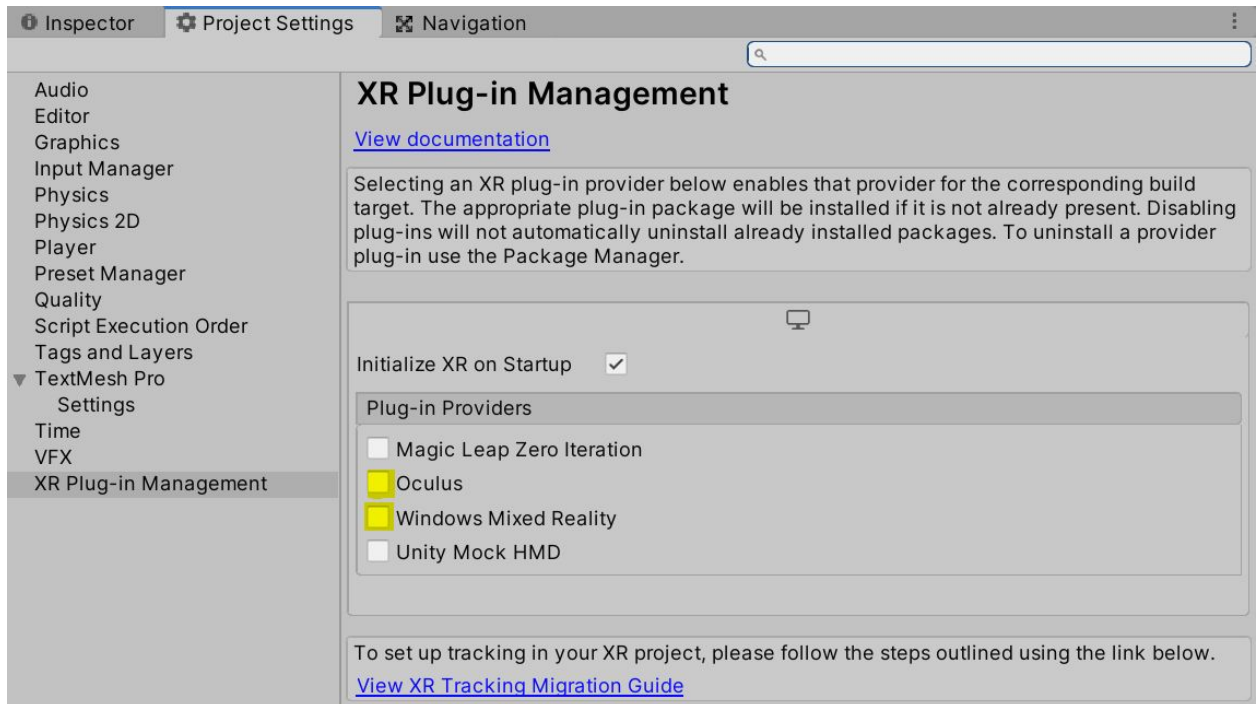# UNITYXR HAND POSER Version 1.0.0

Initial Setup:

1. Navigate to Project Settings - XR Plug-in Management and select the headset you are using.
2. OpenVR is not yet supported in UnityXR, I did provide a Vive Rig that switches the controllers to the touchpad if you can get OpenVR Beta working you can download it here located at the bottom called "steamvr_2_6_0b2.unitypackage".
   https://github.com/ValveSoftware/steamvr_unity_plugin/releases/tag/2.6.0b2
3. Open XRHandPoser/ExampleScene/Hand Poser Example Scene
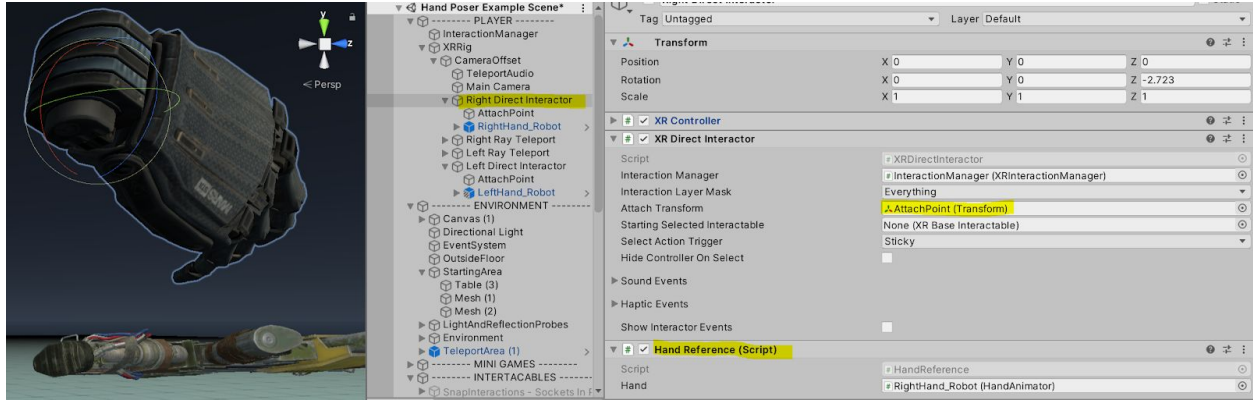
Hand Setup On Player:

1. Add the hand model(RightHand_Robot) to the child of the interactor on XRRig.
2. A separate attachPoint transform should be added as a child of the interactor that matches the position and rotation of the hand model.
3. Assign the attachPoint as the AttachTransform of the interactor in XRDirectInteractor. Adjust both the attachPoint and hand model rotation when adjusting the rotation and position you prefer the hands to be in relationship to your controller position.
4. Attach 'HandReference.cs' to the Interactor.

Handposer/Core/HandAnimator.cs
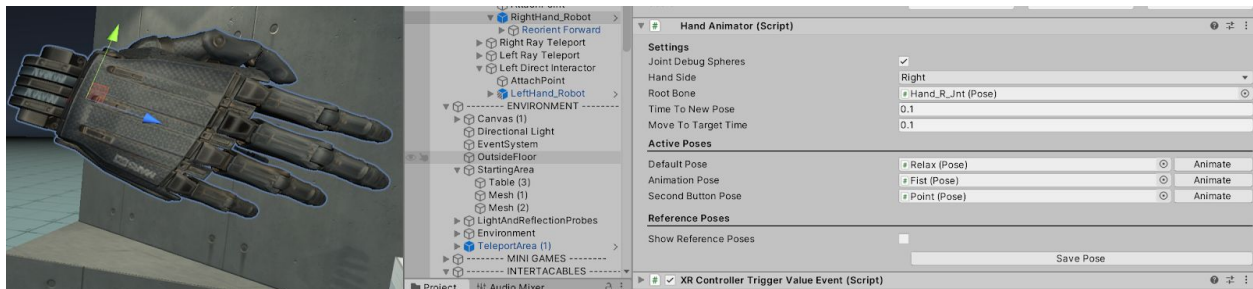
Summary: The main script that animates the hands. Located on the hand model, and as a child of the controller.

Settings

Joint Debug Spheres: Shows the joints of the skeleton rig.

Hand Side: Left or Right hand. Ensure that it matches which controller the hand is located. It does not access XRControllers ControllerNode to maintain an abstraction from it.

RootBone: The skeleton root bone of the model. Add a pose script to the root of the model when setting up. This will find the root bone based on the pose script located on the rootbone.

TimeToNewPose: The time required to animate the current pose to the next pose. IE: When you have nothing grabbed, and grab a cube. The time required to switch from grabbing nothing to grabbing the cube.

MoveToTargetTime: The required time to animate the hands location to the grabbed item's location. Different from when the item is grabbed and the item moves to the hand using "UnityX XRGrabInteractable: Attach Ease In Time" which determines the length of time it takes for the item to be grabbed. By default this animation time does not start till after the item has moved to the location of your controller, and then the hand moves to grab the object and simultaneously the hand animations.

Active Poses

Each pose has an 'Animate' button. This button animates the hand to the pose.

DefaultPose: The default pose the hand will be in when nothing else is happening.

AnimationPose: The pose when you pull the trigger or change the value of "triggerAnimationValue" from 0 to 1 which animates from default pose to animationPose.

SecondButtonPose: The pose only works when nothing is being grabbed. When the grab button is clicked not intersecting with any grabbable objects the hand is animated to this pose.

ShowReferencePoses: These poses are located in Resources/HandPoserSettings. When you make a new pose, you can add them to the HandPoserSettings or change them to your preferences. These are here for the user to click the "Animate" Button to set the hand into a pose to test a pose if it fits or set a starting point to create a new pose.

ReturnToPoser(Button): Only visible when the hand animator is a child of the poser script. Example: When creating poses or positioning the hands on an object this button will appear to select the gameObject where the poser script is located to eliminate the need to locate the object in the hierarchy.

SavePose (Button): Saves the skeleton joint positions from the rootbone and all its children as a new pose.

**Handposer/Core/UnityXR/XRControllerTriggerValueEvent.cs**
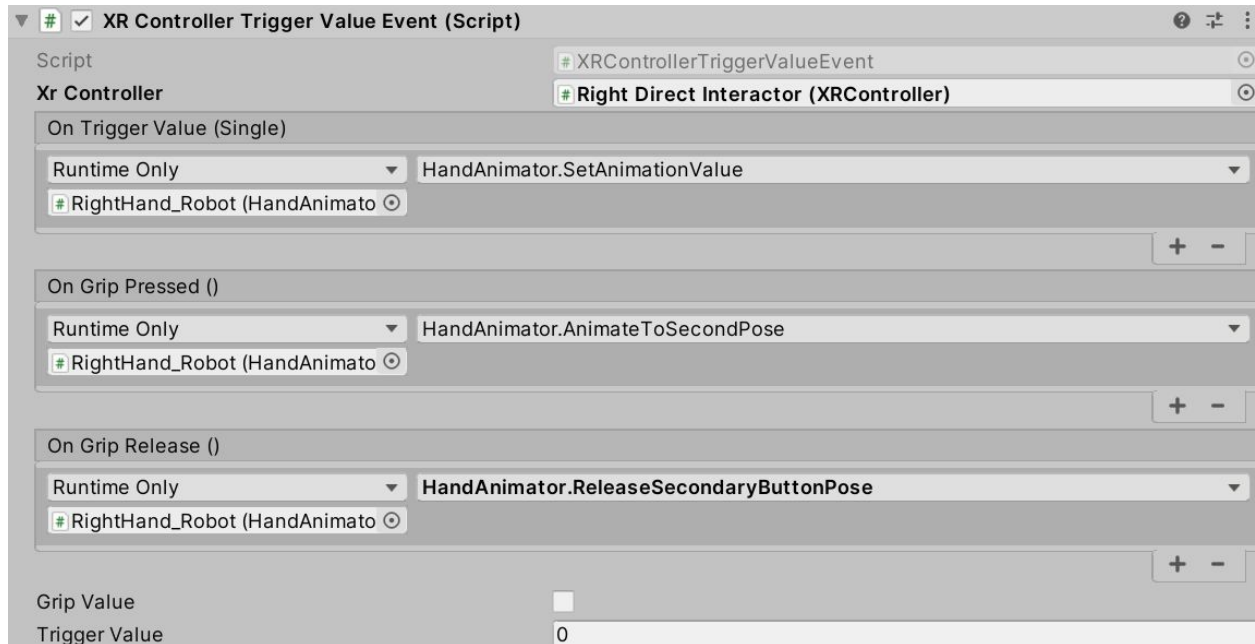
Summary: Simple Temporary class until Unity integrates their new Input System. Required class to control the HandAnimator.cs animations. This class looks for the grip button and trigger button being pressed and uses UnityEvents to update the handAnimator script.

Handposer/Core/UnityXR/XRControllerTriggerValueEvent.cs
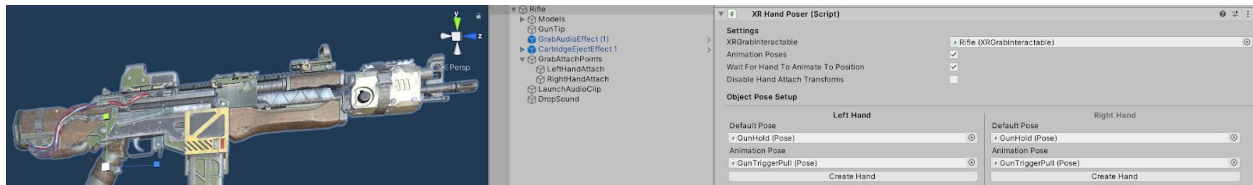
Summary: Class registers to the OnSelectEnter and OnSelectExit of XrGrabInteractable. These event are used to send the hand animator the poses for the item. All other functionality is used to help setup the pose for the grabbable item.
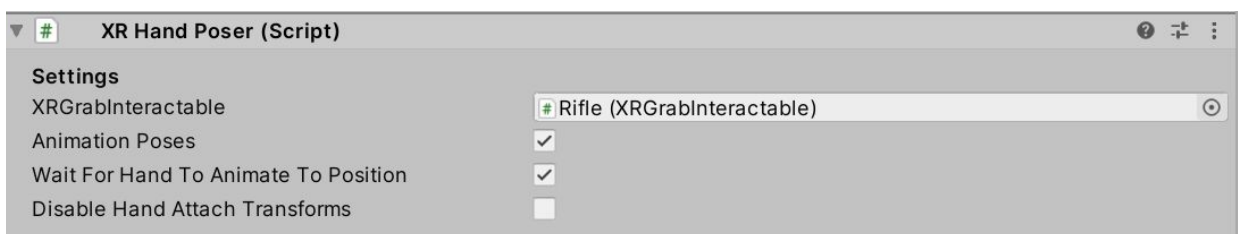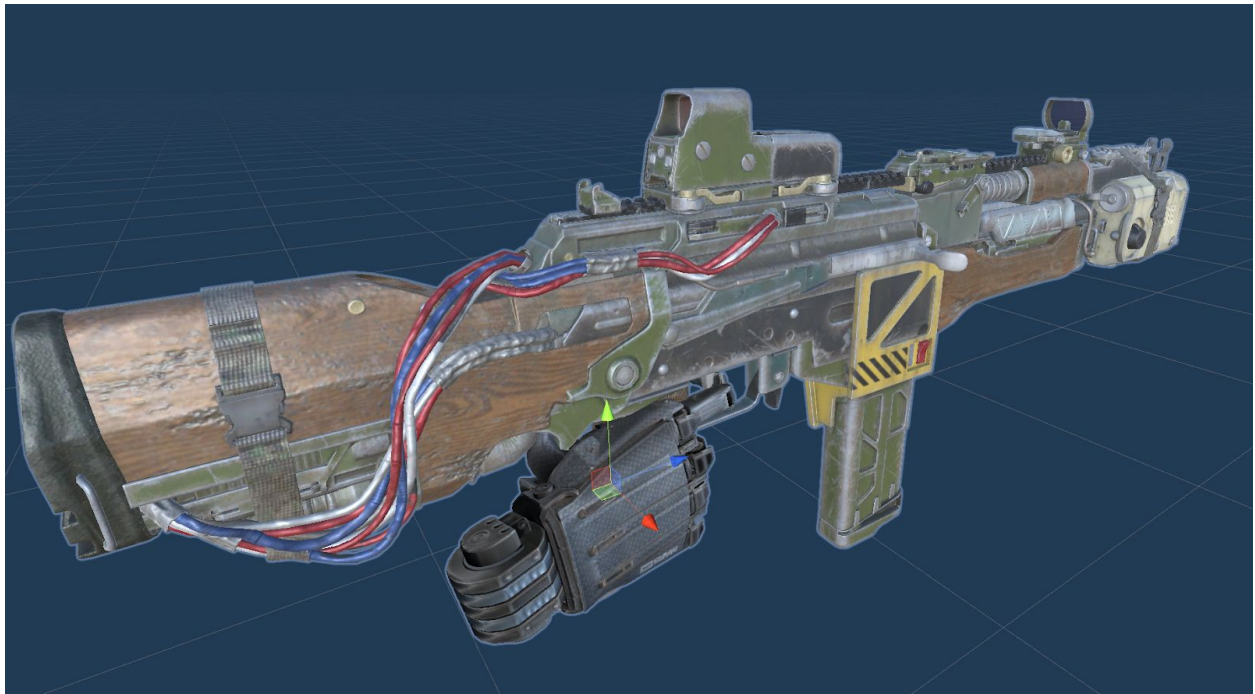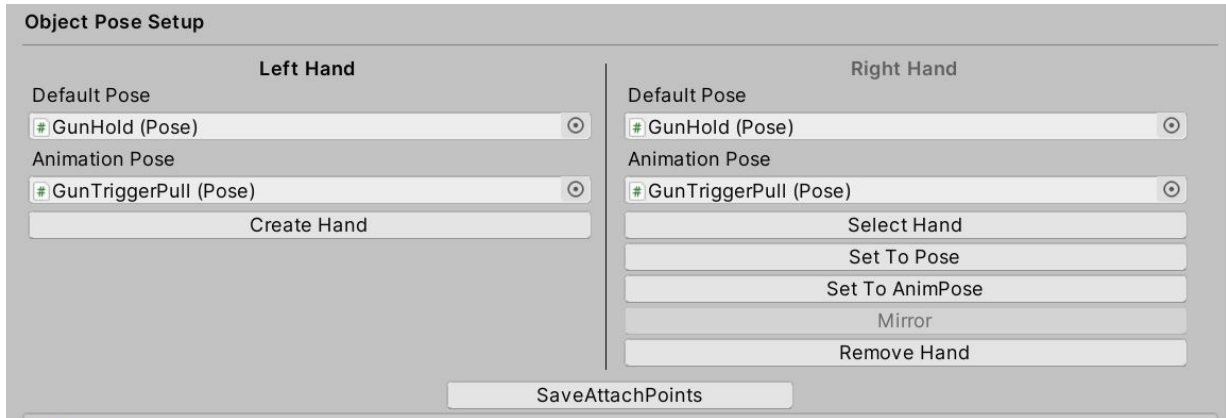

Settings:

AnimationPoses: Does this grabbable have poses to animate to when you pull the trigger.

WaitForHandToAnimateToPosition: Each XRGrabInteractable has an AttachEaseInTime which slows down or speeds up the time in which the item gets positioned to the hand. This bool determines if the hand animation will wait for that easeInTime or move immediately when the item is grabbed. Normal items will always have this as true, which waits for the item to get positioned to the hand location and then animates the hand to grab.

DisableHandAttachTransforms: Special uses: Stops attach transforms from being set. The item will be grabbed at its root or any default transform set in the XRGrabInteractable script. Can be used to rotate the hand position to help align the hand into a better position like Firehand in example scene.

<u>Object Pose Setup</u>: This is where you can create the left or right hand and adjust the poses/animation poses, and location the hand will be when the item is grabbed.. The hands are created mirrored about the Y axis. When setting up the model, ensure Y is up, and Z is forward of the item you are grabbing as shown in the gun below if you want "Mirror" to work properly.

Object Pose Setup

Left Hand		Right Hand	
Default Pose		Default Pose	
# GunHold (Pose)	⊙	# GunHold (Pose)	⊙
Animation Pose		Animation Pose	
# GunTriggerPull (Pose)	⊙	# GunTriggerPull (Pose)	⊙
Create Hand		Select Hand	
		Set To Pose	
		Set To AnimPose	
		Mirror	
		Remove Hand	
SaveAttachPoints			

Create Hand: This will create a temporary hand. The temp hand is used to position where the hand will be grabbed and to animate new poses. When you create a hand for the first time on the grabbable item, a new Gameobject will be childed called 'GrabAttachPoints'. These attach points are used to set the position and rotation of the hand and are set in XRGrabInteractable as the attach point when OnSelectEnter occurs. When the 'Create Hand' button is clicked, it will be replaced with Select Hand.
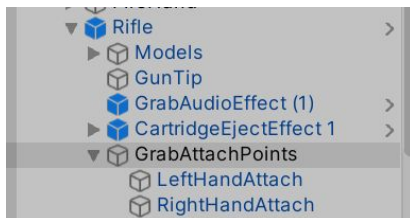
Select Hand: This selects the hand in the hierarchy to bring you to the animationPose of the hand to begin posing and positioning the hand. This button's only purpose is to prevent you from searching for the hand in the hierarchy.

Set To Pose: This will set the hand to the "Default Pose" and position/rotation which were last saved.

Set To AnimPose: This will set the hand to the "Animation Pose" and position/rotation which were last saved.

Mirror: This will mirror the hand pose and position to the other hand.

Remove Hand: Deletes the hand, make sure you "Save Attach Points" before removing the hand to save the position/rotation.

Save Attach Points: This button will be disabled by default. It is only enabled when the hand is not in the same position or rotation as is saved in the 'GrabAttachPoints' of each hand. A warning will also appear to help prevent you from accidentally clicking "Remove Hand" before saving the attach points.

SaveAttachPoints

⚠ Right Hand has moved, click SaveAttachPoints