

Getting Started with SRWorks Experience in Unity

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Prerequisites

To work with this demo project, import all following packages into your project (Figure 1):

(1) SteamVR
(2) SRWorks SDK Unity Plugin > ViveSR
(3) Sample Code Project: Experience Demo > ViveSR_Experience

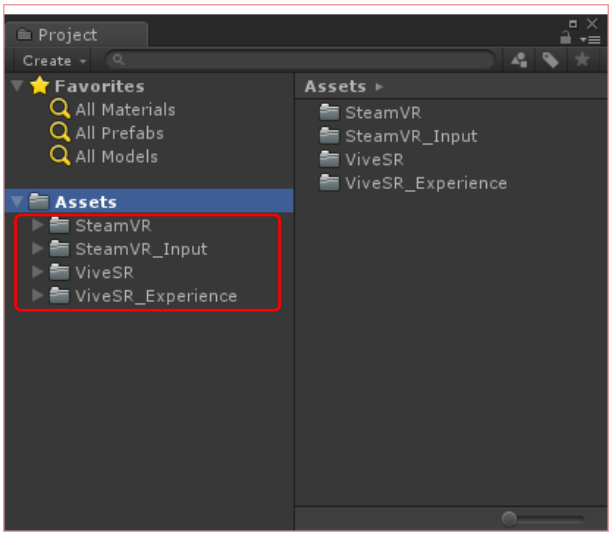


Figure 1. Project Window after Importing

Scenes

In Experience_Unity > Assets > ViveSR_Experience > Scenes, there are 9 scenes (Figure 2):

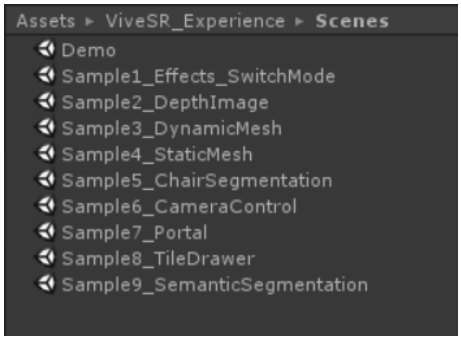


Figure 2. Nine Sample Scenes and a Demo Scene

Demo.unity serves as an introduction scene that demonstrates most of **SRWorks**' features to new users in one go. If you spot some specific features you would like to use, you can check out the **sample scenes** (e.g. **Sample1_Effects_SwitchMode.unity**) to trace code. The sample scenes are breakdowns of all of the features shown in Demo.unity. Unlike Demo.unity, each sample scene targets only one or two features of SRWorks. Therefore, it will be easier to find out about how to call some specific features

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of SRWorks in those Sample scene than it will in the Demo scene. This document will explain the structure of those sample scenes.

Structure

Each sample scene is constructed in this basic structure:

GameObject	Components	Description
Initialization	ViveSR_Experience_Initialization	Tests whether a VIVE Controller, the HMD, and SRWorks Unity Plugin are ready
	ViveSR_Experience_ControllerDelegate	Handles controller input events
	ViveSR_ControllerLatency	Aligns the virtual controller with the real-world controller
Sample#_[SceneName]	ViveSR_Experience	Stores property references frequently used in this project
	Sample#_[SceneName]	Demonstrates specific functions

In some fairly complex scenes and on top of this structure, there are some additional GameObjects and components to look into. These additional components will be discussed later in this document.

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Sample 1—Effects & Switch Mode

This sample demonstrates two applications of SRWork: shader effects in see-through, and the switch between pass-through and VR (Figure 3).

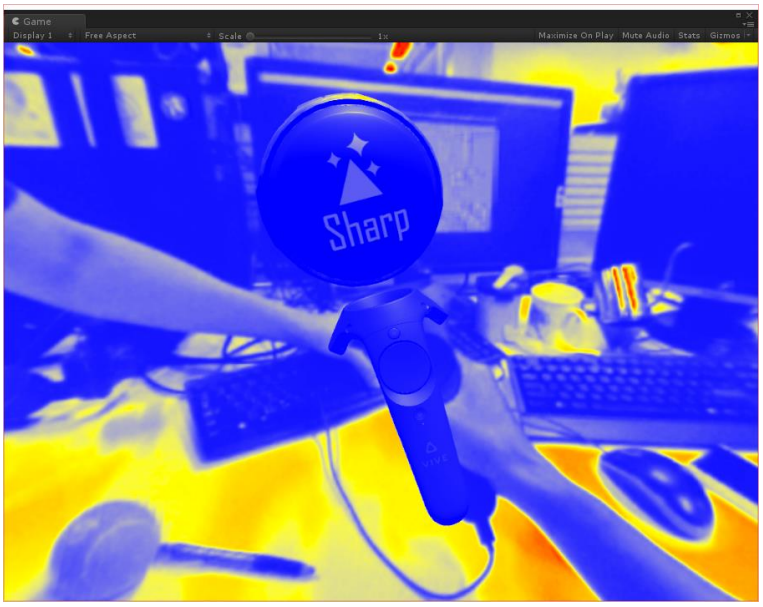


Figure 3. Shader Effect (Sample 1)

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Components

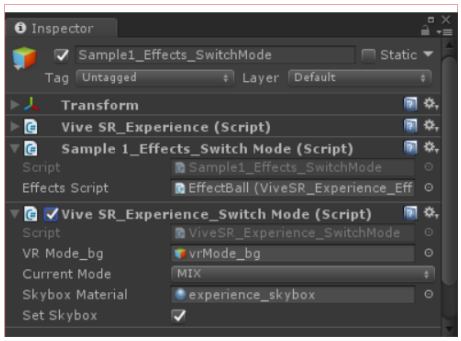


Figure 4. Controlling Components (Sample 1)

The table below breaks down the components used specifically for constructing this sample:

GameObject	Components	Description
Sample1_Effects_Switch Mode	Sample1_Effects_SwitchMode	Handles controller inputs for switching shader effects and MR/VR modes
	ViveSR_Experience_Switch Mode	Contains functions for switching between MR and VR modes
EffectBall	ViveSR_Experience_Effects	Contains functions for switching between shader effects
ImageEffectPrefab	ViveSR_Experience_PostEffects	Contains parameters for shader effects

Table 1. Components (Sample 1)

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Sample 2—Depth Image

This sample demonstrates depth image and its parameters (Figure 5).

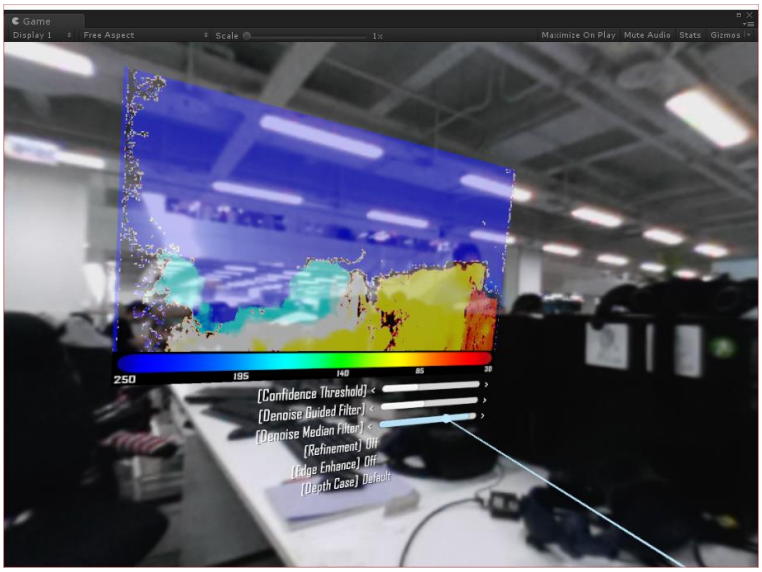


Figure 5. Depth Image Control Panel (Sample 2)

Components

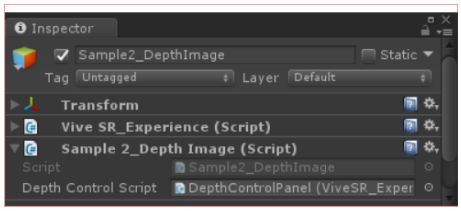


Figure 6. Components (Sample 2)

GameObject	Components	Description
Sample2_DepthImage	Sample2_DepthImage	Handles controller inputs for controlling depth image's parameters
LaserPointer (Instantiated in Sample2_DepthImage)	PlayerHandUILaserPointer	Allows controller to interact with Depth Control Panel
DepthControlPanel	ViveSR_Experience_DepthControl	Controls depth parameters

Table 2. Components (Sample 2)

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Sample 3—Dynamic Mesh

This sample demonstrates depth collider that updates every frame (Figure 7).

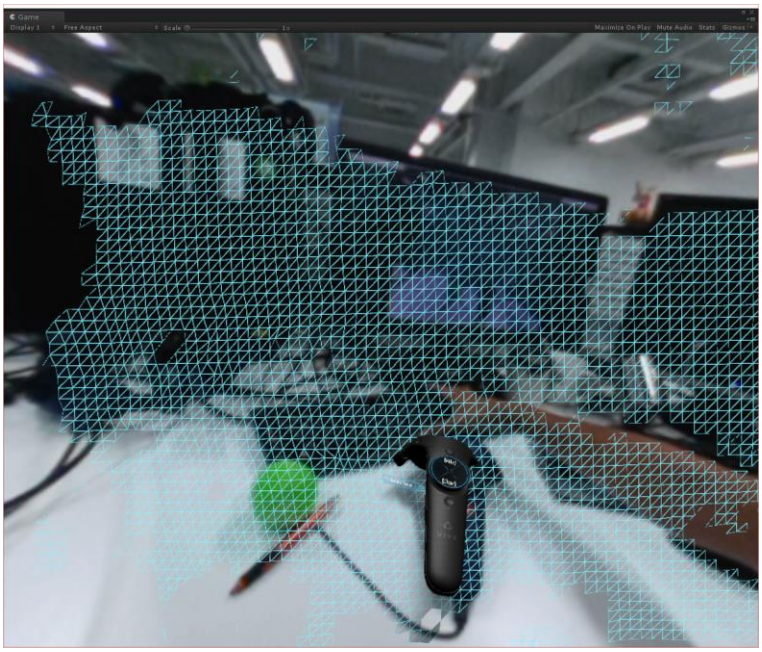


Figure 7. Depth Collider (Sample 3)

Components

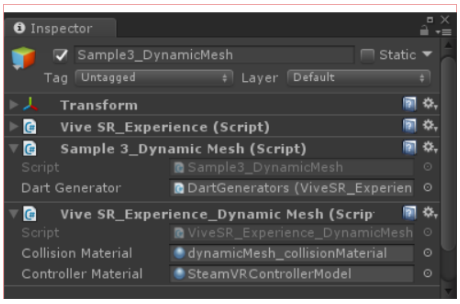


Figure 8. Components (Sample 3)

GameObject	Components	Description
Sample3_DynamicMesh	Sample3_DynamicMesh	Handles controller inputs for toggling depth collider & generating throwable objects
	ViveSR_Experience_DynamicMesh	Contains functions for toggling depth collider

Table 3. Components (Sample 3)

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Sample 4 – Static Mesh

This sample demonstrates pre-scanned mesh (Figure 9).



Figure 9. Static Mesh (Sample 4)

Compatibility

AMD graphics cards are not compatible with SRWorks' 3D Reconstruction module, a requirement of this scene.

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Components

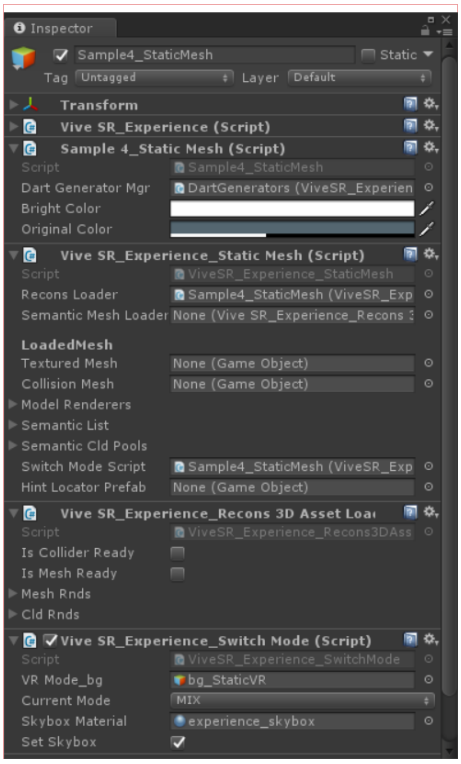


Figure 10. Components (Sample 4)

GameObject	Components	Description
Sample4_StaticMesh	Sample4_StaticMesh	Handles controller inputs for operating mesh (scanning, saving, and loading mesh) & generating throwable objects
SwitchMode	ViveSR_Experience_SwitchMode	Contains functions for switching between MR and VR
StaticMesh	ViveSR_Experience_StaticMesh	Contains functions for scanning, saving, and loading mesh
	ViveSR_Experience_Recons3DAssetLoader	Contains functions for loading mesh data saved on the local disc

Table 4. Components (Sample 4)

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Controller Input

Input	Description
Touchpad Up	Start scanning
Touchpad Down	Load saved mesh data from the local disc
Touchpad Left	Stop scanning
Touchpad Right	Save mesh
Trigger	Generate a toy to throw
Grip	Switch Collider Display—available only after mesh data is loaded

Table 5. Controller Input (Simple 4)

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Sample 5—Chair Segmentation

This sample demonstrates an application case of mesh segmentation (Figure 11).

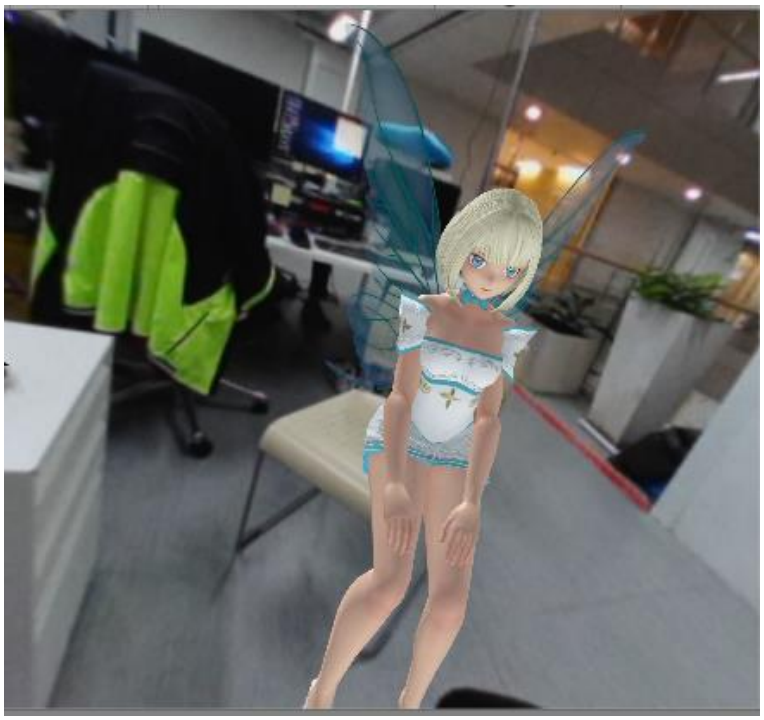


Figure 11. Chair Segmentation (Sample 5)

Compatibility

AMD graphics cards are not compatible with SRWorks' 3D Reconstruction module, a requirement of this scene.

Demo Video

Demo Video: https://youtu.be/eMB_nApqb6w

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Components

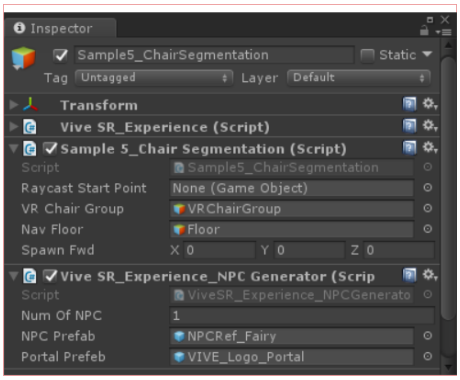


Figure 12. Components (Sample 5)

GameObject	Components	Description
Sample5_ChairSegmentation	Sample5_ChairSegmentation	Handles controller inputs for scanning and saving mesh, testing whether any chair has been identified, and generating NPC fairies
	ViveSR_Experience_NPC Generator	Contains functions for generating NPC fairies
StaticMesh	ViveSR_Experience_Static_Mesh	Contains functions for scanning, saving, and loading mesh
	ViveSR_Experience_Recons3DAssetLoader	Contains functions for loading mesh data saved on the local disc

Table 6. Components (Sample 5)

Controller Input

Input	Description
Touchpad Up	Start scanning
Touchpad Down	Load saved mesh and segmentation data from the local disc
Touchpad Left	Stop scanning
Touchpad Right	Test if any chair is scanned; if not, continue scanning.
Trigger	Generate a throwable GameObject
Grip	Switch Collider Display—available only after mesh data is loaded
HMD	When the HMD is close in distance with an NPC fairy, she yields her seat to the player

Table 7. Controller Input (Simple 5)

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Sample 6—Camera Control

This sample demonstrates SRWorks' camera control feature (Figure 13). *

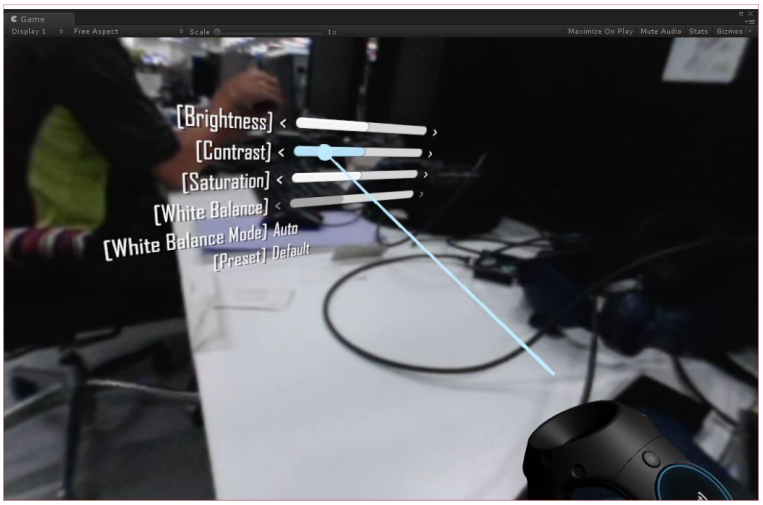


Figure 13. Camera Control (Sample 6)

Compatibility

VIVE Cosmos is not compatible with SRWorks' Camera Control feature.

Components

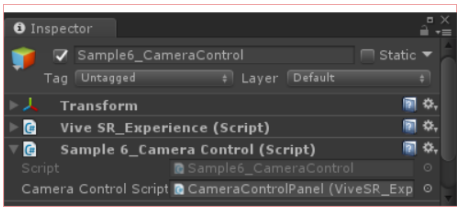


Figure 14. Components (Sample 6)

GameObject	Components	Description
Sample6_CameraControl	Sample6_CameraControl	Handles controller inputs for controlling camera planes' parameters
LaserPointer (Instantiated in Sample6_CameraControl)	PlayerHandUILaserPointer	Allows controller to interact with Camera Control Panel
CameraControlPanel	ViveSR_Experience_CameraControl	Controls camera parameters

Table 8. Components (Sample 6)

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Sample 7—Portal

This sample demonstrates the portal effect (Figure 15). A detailed instruction for creating such effect can be found in **SRWorks Plugins/SRWorks Unity Portal Guideline.docx**.



Figure 15. Portal (Sample 7)

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Components

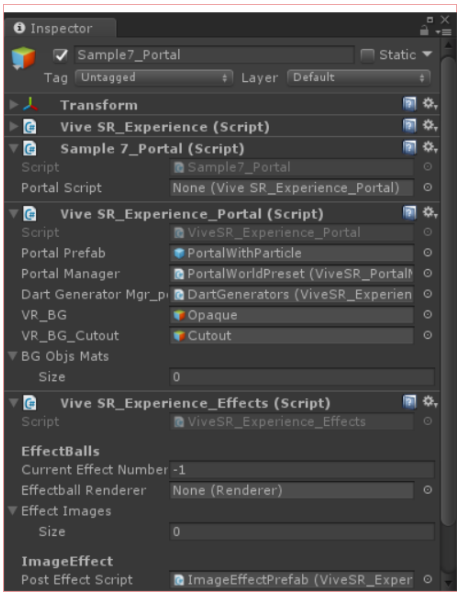


Figure 16. Components (Sample 7)

GameObject	Components	Description
Sample7_Portal	Sample7_Portal	Handles controller inputs for placing the portal in front of the player and for generating throwable GameObjects
	ViveSR_Experience_Portal	Contains functions for generating portals
	ViveSR_Experience_Effects	Contains functions for switching shader effects

Table 9. Components (Sample 7)

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Sample 8—Tile Drawer

This sample demonstrates tiles placement and depth occlusion.

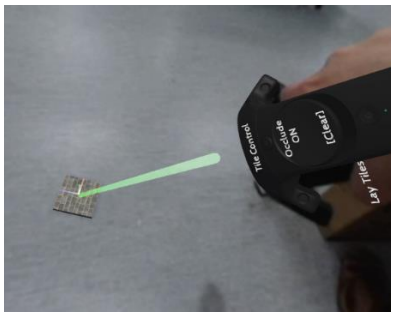


Figure 17. Laying Tiles

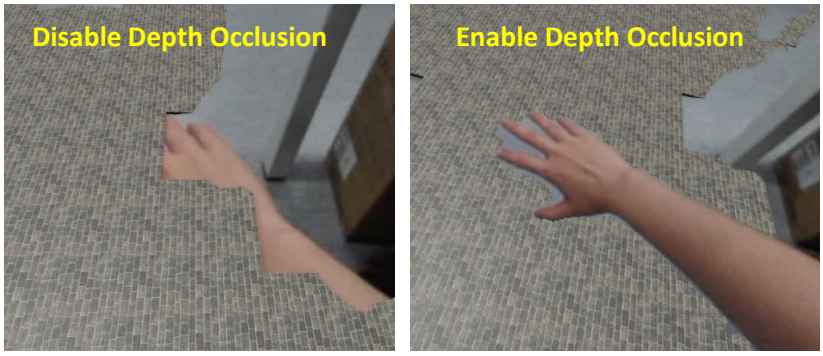


Figure 18. Depth Occlusion

Compatibility

AMD graphics cards are not compatible with SRWorks' 3D Reconstruction module, a requirement of this scene.

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Components

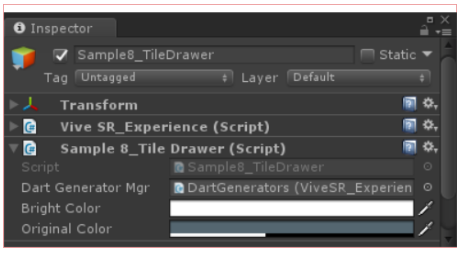


Figure 19. Components (Sample 8)

GameObject	Components	Description
Sample8_ Tile Drawer	Sample8_ Tile Drawer	Handles controller inputs for laying tiles on scanned mesh and for toggling depth occlusion
TileDrawer	ViveSR_Experience_TileMgr	Manages generated tile GameObjects
	ViveSR_Experience_TileSprawner	Contains functions for laying tiles on scanned mesh

Table 10. Components (Sample 8)

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Sample 9—Semantic Segmentation

This sample demonstrates SRWorks' capability in mesh segmentation and scene understanding.

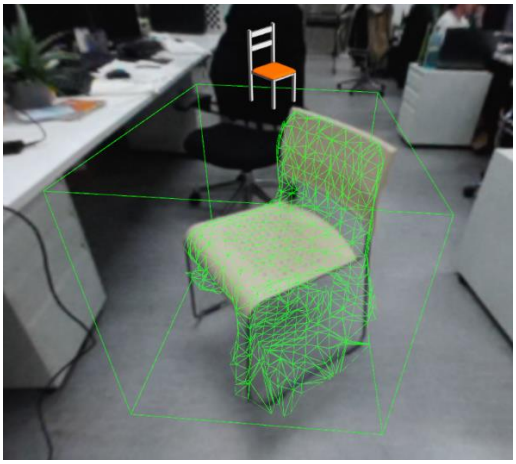


Figure 20. Segmentation

Compatibility

AMD graphics cards are not compatible with SRWorks' 3D Reconstruction module, a requirement of this scene.

Components

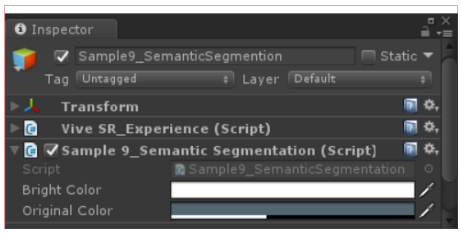


Figure 21. Components (Sample 9)

GameObject	Components	Description
Sample9_ SemanticSegmentation	Sample9_ Semantic Segmentation	Handles controller inputs for scanning and loading segmented mesh
StaticMeshTools	ViveSR_Experience_Static_Mesh	Contains functions for scanning, saving, and loading mesh
	ViveSR_Experience_Recons3DAssetMultiLoader	Contains functions for loading multiple mesh data files saved on the local disc

Table 11. Components (Sample 9)

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Sample 10—Human Cut

This sample demonstrates SRWorks' capability in mesh segmentation and scene understanding.



Figure 22. HumanCut

Compatibility

AMD graphics cards are not compatible with SRWorks' AI vision module, a requirement of this scene.

Components

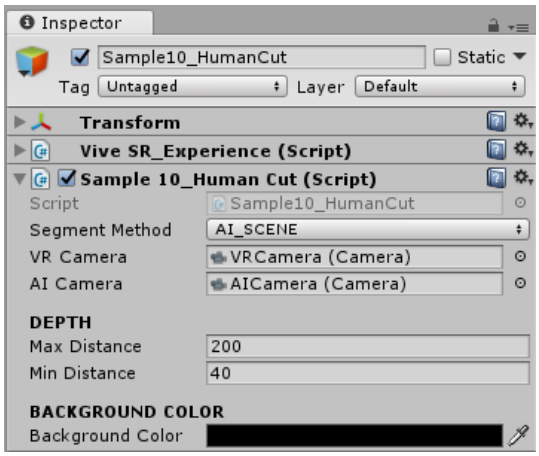


Figure 23. Components (Sample 10)

GameObject	Components	Description
Sample10_HumanCut	Sample10_HumanCut	Three methods for Human cut
Disco Scene		VR world

Table 12. Components (Sample 10)

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