

Handheld Controller Plugin for HoloLens

v1.0.0.1

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Release Notes

1.0.0.0

- Original release

1.0.0.1

- 2018.05.08 – Updated sample with latest HoloToolkit

Plugin Overview

Connect a Bluetooth Low Energy handheld controller with a Microsoft HoloLens™ (currently works exclusively with Google Daydream™ controller). Data from all 5 buttons, touchpad coordinates, accelerometer, gyroscope and magnetometer relayed from the controller to HoloLens at 60+ fps.

System Configuration

The correct combination of several moving parts is essential for publishing to HoloLens. The latest version of the plugin has been tested with the following configuration:

- MixedRealityToolkit: 2107.2.1.4 Patch Release
 - <https://github.com/Microsoft/MixedRealityToolkit-Unity/releases>
- Unity 2017.4.0f1
- Visual Studio Community 2017
- Windows 10.0.16299
- HoloLens update: 10.0.14393.2125

Sample Project - Advanced

The included sample project demonstrates laser pointer implementation and all buttons and touchpad interactivity. A bridge class is included that handles connection to the handheld controller and converts the raw data into a usable rotation Quaternion and press/release Actions for each button. With this plugin it is simple to incorporate natural laser pointer control input into your HoloLens project.

To connect with the device, use traditional HoloLens nose pointing to select either the Auto Connect button or for a more manual approach select the Scan for Devices button then choose a controller from the dropdown list (if more than one was identified) and then click Connect. Note that the cursor became ineffective in my sample project as of the latest release of the HoloToolkit. Rely on the buttons highlighting in red to determine when you are pointing at a button. Use the air tap gesture to click a selected button.

Once a handheld controller device is connected calibrate it by pressing the Home button while pointing the device in the Forward direction. Align your real-world controller with the on-screen controller when calibrating.

Press the App button to cycle through debug display options.

Pop balloons by pointing the laser pointer at them. Turn the pop sound on and off with the volume buttons on the controller.

Configure the on-screen controller to be located near your left or right hip for natural intuitive laser pointer simulation. Or, place it on the screen so you may observe it rotating with your hand gestures.

Pair your HoloLens device with any nearby handheld controller devices you would like to connect with. Bluetooth pairing settings may be found in the HoloLens Settings menu > Devices > Bluetooth. Your HoloLens device may be paired with more than one handheld controller device, and the plugin may connect with one of the paired devices at a time.

Sample Project – Bare Essentials

The included Bare Essentials sample project demonstrates the essentials needed to connect with a handheld controller device. A connection with a handheld controller device is established automatically then the user may calibrate the controller and move the laser around.

Pro and Lite Versions

The Lite version of the plugin permits unrestricted use of the controller for 2 minutes. After 2 minutes the Accelerometer, Gyroscope, Magnetometer and raw data values are no longer transmitted, however all other buttons remain functional. The Pro version includes all features.

Plugin Installation

Copy the whole Plugins folder at the top level of the distribution package and copy it into the top level of the Assets folder of your Unity Project, leaving the folder named “Plugins”. The plugin is actually 2 companion plugins. See the included SetupImages folder for images of the following configuration settings.

- The first plugin is located in the Plugins folder and is called WSAControllerPlugin. Click on it to open the configuration settings in the Inspector panel. Select Editor in the Select platforms for plugin > Include Platforms area.
- The second plugin is located in the Plugins/WSA folder and has the same name as the first plugin: WSAControllerPlugin. Set this one to WSAPlayer in the Inspector panel > Editor > Select platforms for plugin > Include Platforms area.
 - Check the Don't Process checkbox
 - Select from the Placeholder dropdown the first companion WSAControllerPlugin plugin in the Plugins folder.

Unity Project Configuration

- Set all the HoloLens settings as described in the HoloLens documentation (camera, publishing settings, etc.)
- To enable Bluetooth, select the following checkbox in the publishing settings: Edit>Project Settings>Player>Publishing Settings>Capabilities>Bluetooth
- Place the plugin files in the Assets folder. The WSAControllerPlugin.dll file should be in the Assets>Plugins folder and the similarly-named WSAControllerPlugin.dll file inside the WSA folder should remain in the WSA folder (the WSA folder should be in Assets > Plugins).
- The sample Unity project requires the HoloToolkit from Microsoft. The toolkit has been included in the sample project.

- Drag a copy of the HandheldControllerBridgePrefab from the Assets > Prefabs folder into the scene. In your own script make a reference to the HandheldControllerBridge script in the HandheldControllerBridgePrefab you just added to your scene and use the properties and methods of the HandheldControllerBridge script to connect with and communicate with the handheld controller device.

API

- See the Documentation folder for API documentation.

Notes

- After the connection to the handheld controller has been made there will be a 5-10 second delay before values are received.
- The plugin works with HoloLens devices and may not work with an HoloLens emulator.