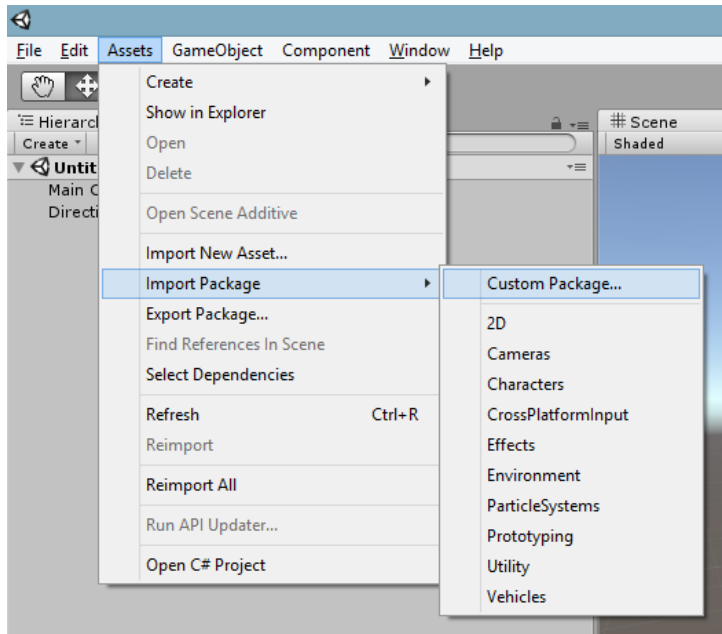


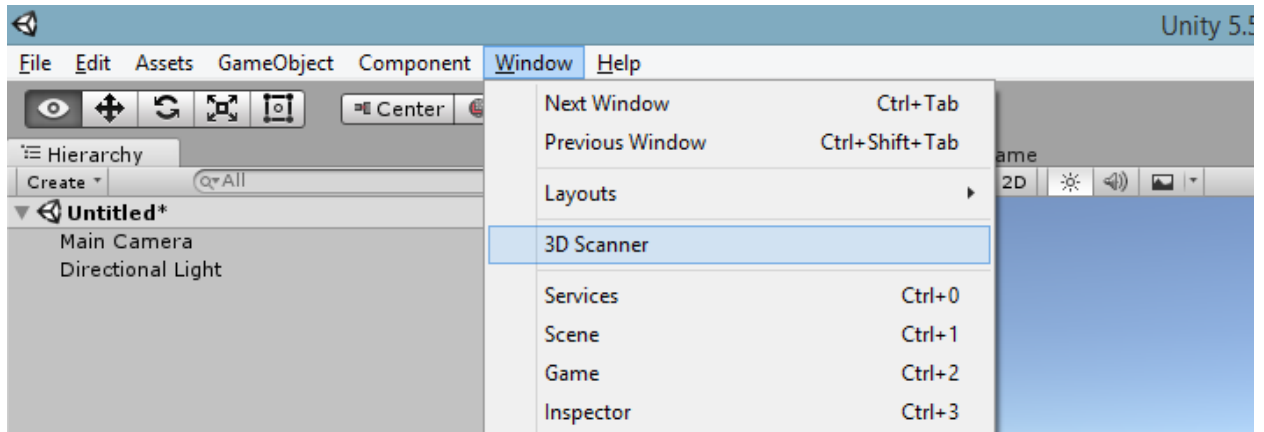
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1 – Installation

1. To install the plugin (packaged as a *.unitypackage)
in your Unity window select: “Assets > Import Package > Custom Package”



2. Find the package in your filesystem and click “Open”.
3. If the package imported correctly open the plugin UI by selecting “Window > 3D Scanner”

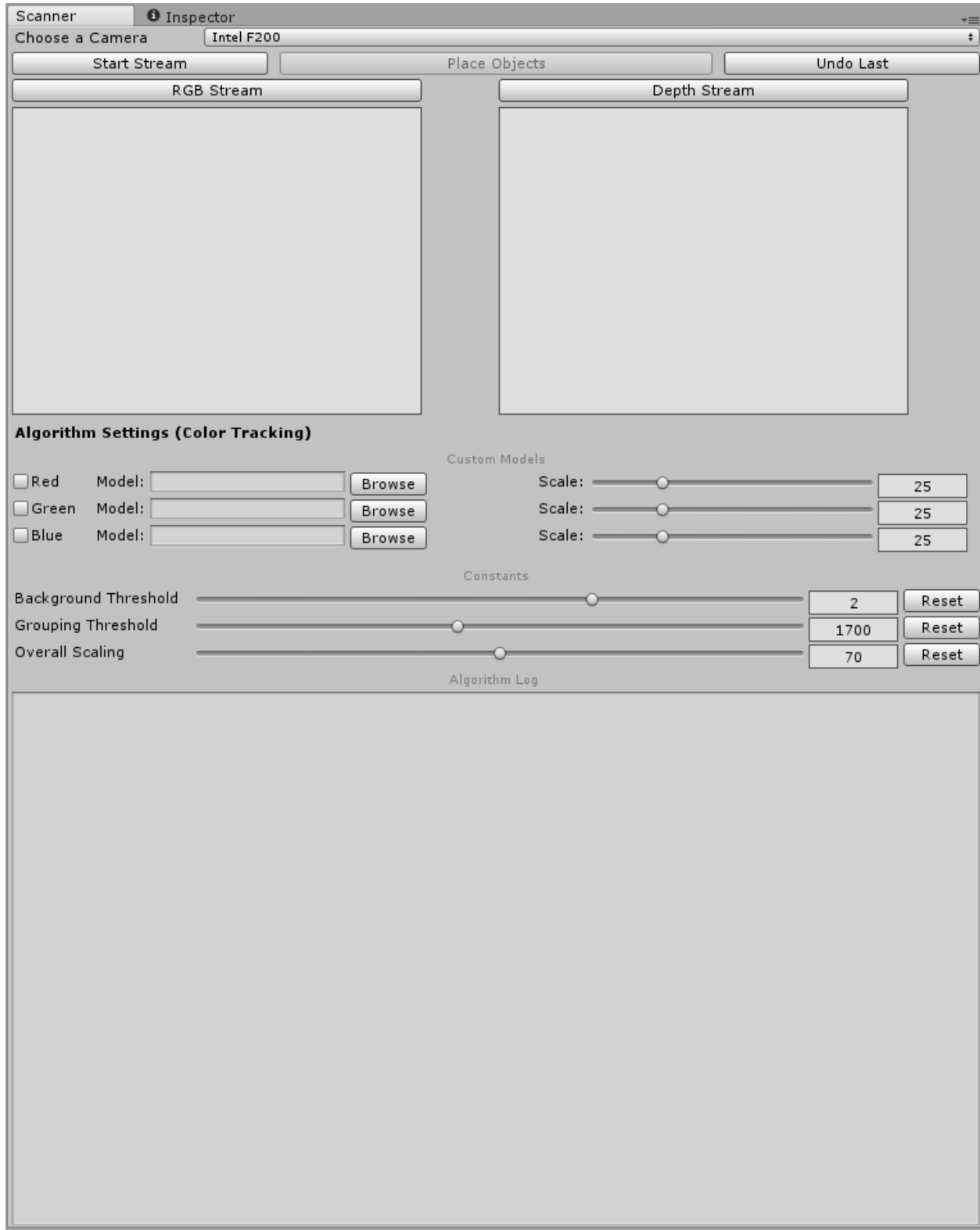


The 3D Unity Scanner is successfully installed!

NOTE: You can snap the window anywhere you like, but it was built with a column-layout in mind. It is recommended to snap to the right or left side of the scene window

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2 - Interface



The following is an overview of the plugin interface from top to bottom.

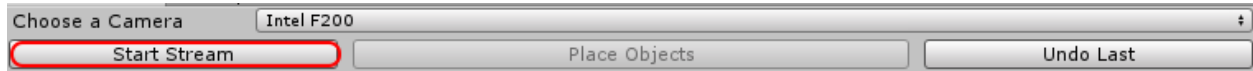
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1. **Choose a Camera** – The top of the interface is a drop-down menu to select different camera devices (Default: Intel F200).
2. **Start Stream** – This button begins the video stream from the selected camera and displays the output in the “RGB Stream” and “Depth Stream” boxes.
3. **Place Objects** – When the stream is running you can press this button to perform detection and place the corresponding models in the Unity Scene.
4. **Undo Last** – This button will clear the previous scanned objects from the Unity Scene.
5. **Depth Stream** – The label of the depth stream can be pressed to toggle to the “Processed” stream where you can view how the algorithm is segmenting objects from the background.
6. **Red/Green/Blue** – If any of these options are checked the algorithm will associate the user selected model at the specified scale for the corresponding detected color. For further explanation of this feature see [Section 3 - Use Cases](#).
7. **Background Threshold** – Allows the user to change the tolerance of the background pixels in the algorithm. A higher value corresponds with a higher likelihood of a pixel being recognized as a background pixel.
8. **Grouping Threshold** – Allows the user to specify minimum size of a recognizable block on the screen
9. **Overall Scaling** – Scales all created objects by the specified value

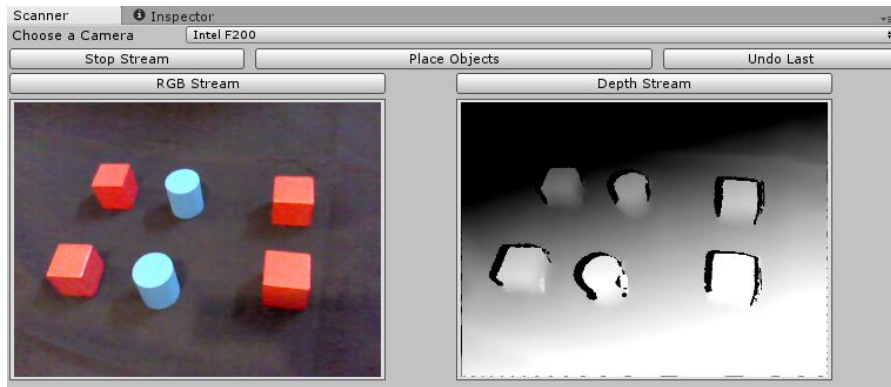
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3 – Use Case

1. Ensure your Intel RealSense F200 camera is plugged in and click the “Start Stream”.

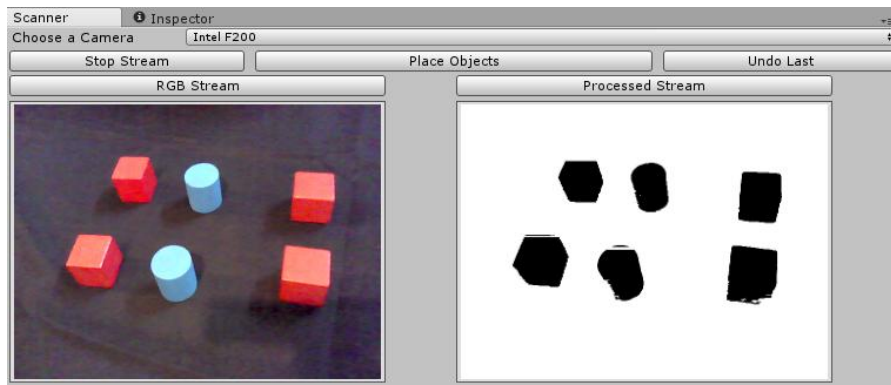


Your camera should now stream to the boxes labeled “RGB Stream” and “Depth Stream” below.

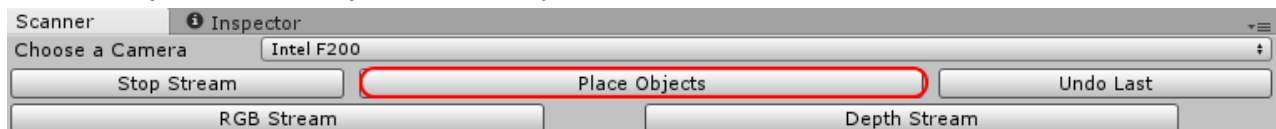


You can press the toggle button above the Depth Image to switch to a processed image.

This image shows you how objects are being segmented from the background as seen below.

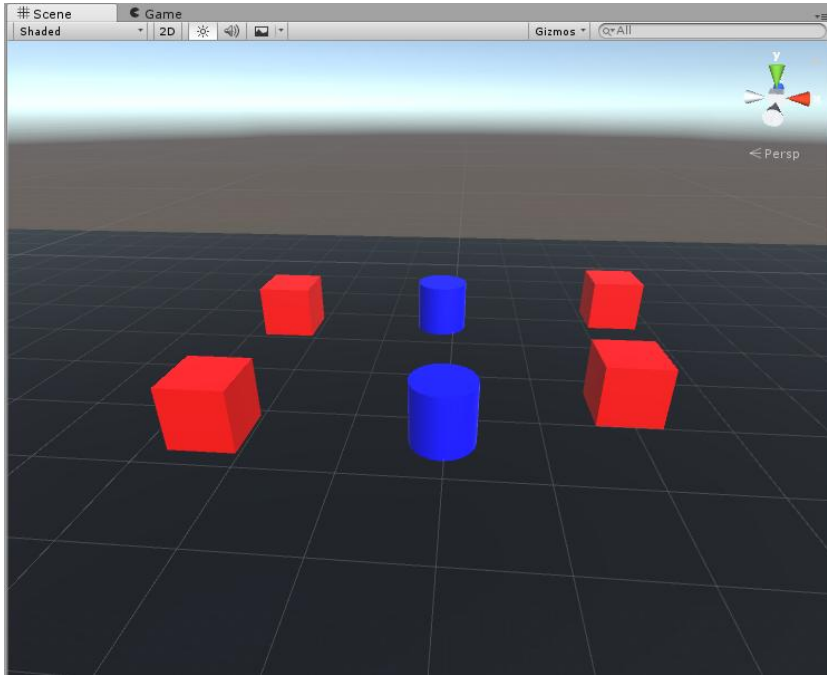


2. While the camera is streaming you can press the “Place Objects” button in the center to place the detected objects as GameObjects in the Unity scene.



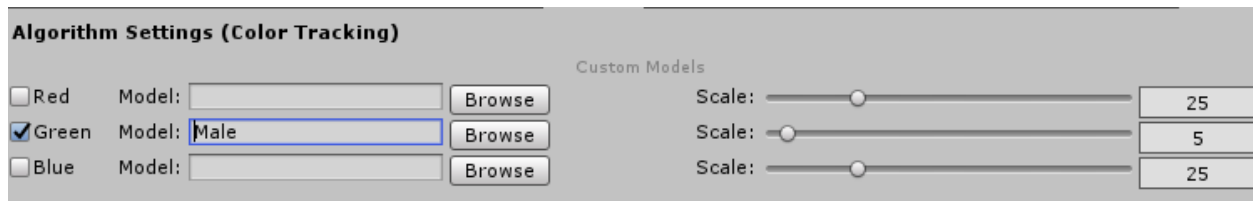
You should see objects spawn in the Scene window.

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Keep in mind, if you aren't satisfied with the resulting orientation you can always use the "Undo Last" button and try again.

NOTE: To replace a model with a custom model check the box next to the color you would like your model to correspond to. Then, click "Browse" and find your model in your project's Assets > Resources folder and select it. You can also adjust the slider to change the scale the object is created with.



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4 – Troubleshooting

Whenever I click 'Start Stream' nothing changes on the user interface and I get an error in the console

If you have not already done so, follow the instructions at <https://software.intel.com/en-us/intel-realsense-sdk/download> to properly install your Intel RealSense F200 camera driver and SDK Essentials. If you have followed these instructions and the problem persists, ensure that the camera is plugged into your computer.

I have two blocks near each other but only one is being populated into the scene

The algorithm for processing the images relies on visible separation between two blocks. Use the processed stream to see an intermediate representation of what the algorithm is doing. Make sure that the blocks (represented as black silhouettes) are totally separated by the background/table.

More objects are being populated into the Unity Scene than I have on the table

The algorithm for processing the images relies on strong contrast between the colors of the blocks and the background. Use the processed stream (Use the toggle button above the depth stream) to see how the algorithm is interpreting the image. Some possible steps to try are: increasing the value of the Background Threshold parameter, place your blocks on a more monochromatic surface, and minimize shadows by using even lighting.