POST LINER FREE

User Documentation v1.7
3/27/2021

CONTENTS

WELCOME

Thanks for checking out **Post Liner Free**! Although there are numerous outlining shaders on the Asset Store, we do think ours offers some unique features and usability that others do not. This is a free asset, and if it does what you want—cool! If you need more control, or you want to support great free assets, you can get **Post Liner Pro** for nearly nothing. Every little bit helps.

If you like the asset, *please* do take a moment to write a positive review or give it a ★★★★★ rating. Be sure to recommend it to your friends. Building assets for the Unity developer community takes a lot of time and effort, so be sure to support the ones that make your life easier. Otherwise we won't be able to keep doing it for you.

The URL to leave a review is right here:

https://assetstore.unity.com/packages/slug/149832

FIRST STEPS (BORING, BUT RECOMMENDED)

This document is the best place to learn about the features and uses about this asset. Please read it thoroughly, as we want to make sure you get the most out of your investment.

1. Create a **brand new project**. This may seem unnecessary, and while we go through great lengths to make sure there are no collisions with other assets, it is impossible to provide a guarantee for every combination of settings. Overall, this will give you the best possible experience to first figure out how to use the asset without introducing other variables.

2. Install **Post Processing Stack v2** via the Window → Package Manager.

3. Install **Post Liner Free** from the Asset Store.

4. Install **Space Robot Kyle** from the Asset Store. It's free, and we use it to demonstrate the outline shader for skinned meshes.

5. Open the provided test scene. All our assets come with example data specifically for trying them in safe isolation. (Later, when you install it into your project, everything under the *testScenes* folder may be removed.)

6. Switch to Game View. (SceneView works too, but the effect looks best in GameView.)

7. Select Main Camera and scroll the Inspector down to the *Post Liner Renderer* component.

8. Drag a Cube to the blue box that says "Drag here to add outline". As soon as you drop the cube, it should appear with a yellow outline, interior edges lit, and generally slightly brighter as well.
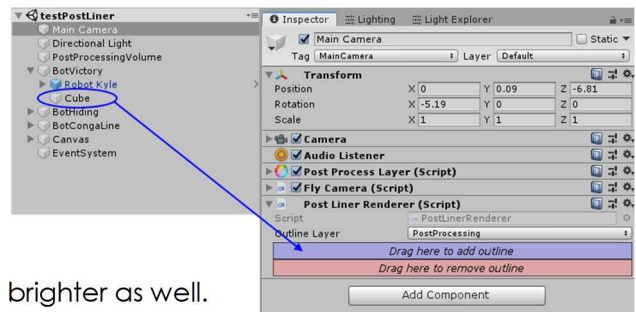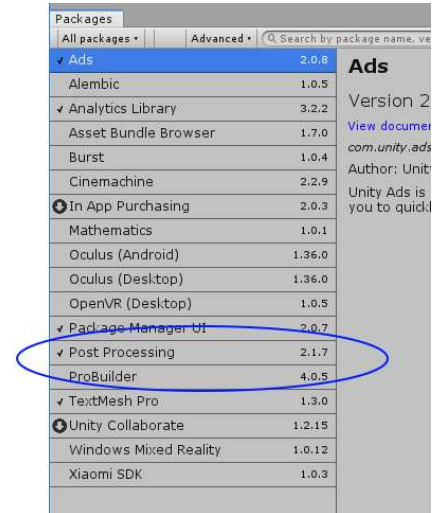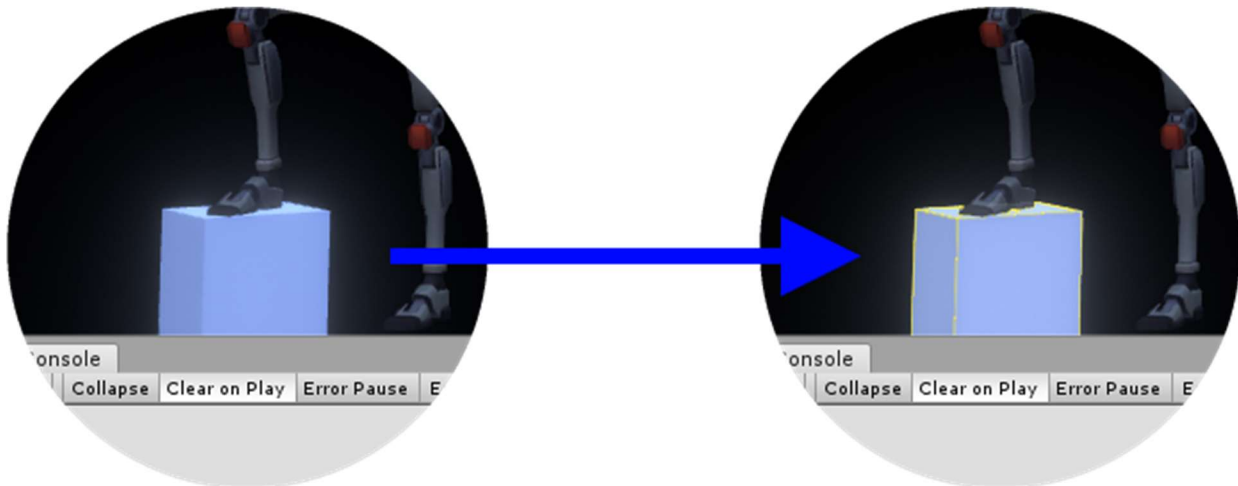
outline will persist until the Cube is dragged to the "Drag here to remove outline" box, or until Unity recompiles C#. It's purely for temporary inspection while tweaking the appearance of the shader. We will come back to that later.

9. Press Play. There is a simple fly cam script attached to the camera, so you can WASD around and aim with the mouse. The backtick will toggle the mouse cursor on and off, so you can tweak things while in play mode easily. (Not only is Space Robot Kyle looking pretty spiffy with his new outlines, he watches your camera movement with some interest. Kinda fun.)
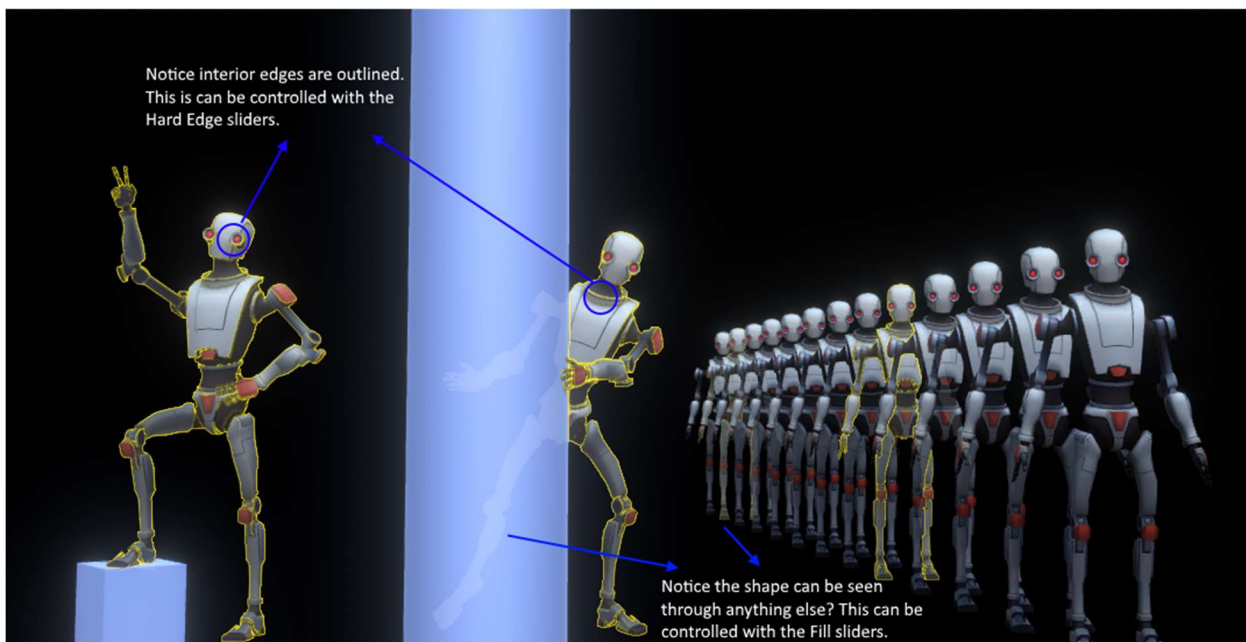
10. Click on the PostProcessingVolume object and open up the *Post Liner* effect. Each of these sliders control some important aspect of the shader, which you may feel free to tinker with. Some are more useful than others, but all are necessary. Realize that modifying the effect settings is modifying the **asset**, so changes are permanent even while running the game.
    a. To revert the settings back to defaults, uncheck the boxes on the left.

b.   If you want to restart entirely, you can simply remove the effect and add it again.

11. At this point, take a second to read through the description of the sliders in more detail. Although it is relatively easy to use, there may be settings you need to adjust to get exactly the look you want. The remaining sections will help you gain a deeper understanding of the effect shader and teach you how to use it effectively.

IMPORTING INTO YOUR PROJECT

If you need to import a *Post Processing Stack v2*, follow the steps in the previous section. To actually set up **Post Liner Free**, do the following:

1. Import **Post Liner Free** asset package

2. Select the active (or global) *Post Processing Volume*

3. Add Effect… Reachable Games → *Post Liner Free*

4. Select your camera

5. Add component… *Post Liner Renderer*.
    a. Select an *Outline Layer* that is **not being used by anything rendered**. If you have a layer dedicated to the PPSv2's Post Processing Volume colliders, this is a good choice. Or make a new layer just for this. Make sure your cameras and lights include this layer, otherwise nothing will be drawn into the effect.

6. Add an object to the outliner
    a. If you're a madman and doing this while running, add the *Post Liner Outline* component to any object
    b. If in the Editor:
        i. Switch to Game View
        ii. Select the Camera
        iii. Drag any object to the blue box that says "Drag here to add outline"

FEATURES

Post Liner Free is a robust, beautiful outline shader that gives you excellent control over the look with virtually no coding required. And if you get the **Pro** version, it's highly tweakable.

WYSIWYG-IN-EDITOR

Get your look right the first time. Simply drag objects to the *Post Liner Renderer* script inspector and you can tweak the Post Processing Volume's effect settings live. It saves those settings as an asset automatically, even if you modify it at runtime.
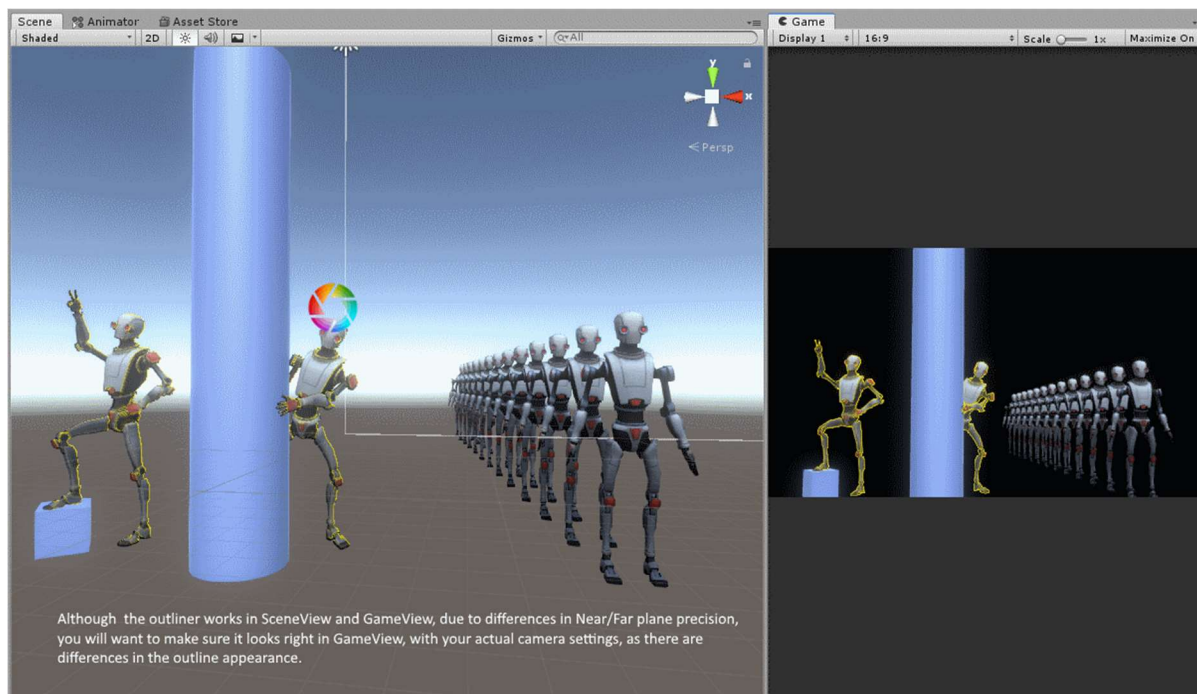
WORKS ON ANYTHING THAT CAN BE RENDERED

Many solutions only work on non-skinned objects. Post Liner works on anything, because we use a Camera to render. If a Camera can render it, Pro Liner can outline it. This means your animated characters will look good with an outline around them, not just T-posed.

SEPARATE CONTROLS FOR HIDDEN PIXELS **(PRO ONLY)**

Post Liner has separate sliders to control the amount of fill and outline that will show up on occluded pixels. Since you can slide these down to zero, you can have a highlight effect that shows only the parts of objects that are visible. Similarly, you can create a nice X-Ray effect by sliding down the visible pixel sliders and tune the hidden pixel sliders to look the way you want, like Super Mario Galaxy.

DEPTH FADING PER EFFECT ELEMENT **(PRO ONLY)**

Some things look good up close, but not farther away. Depth fading gives you direct control over where different parts of the effects fade out. This setting now is "how far between Near and Far plane does this effect **start** fading out". There is also a Fade Distance, which is "how far from the **start** fading

point will this effect be completely gone", also described in terms of Near/Far plane distance. This way you can get an effect looking nice and change your camera settings and not necessarily have to re-tune the effect.

ALL SOURCE IS INCLUDED

If you want to change the way it works, knock yourself out! It's a great starting point for building your own solution effect—provided you don't sell it or release it to the asset store, of course.

SINGLE COMPONENT CONTROL AT RUNTIME

To add highlighting to an object during runtime, simply add the *Post Liner Outline* component to it, and anything on that object and below will be rendered with the outline shader. To disable the highlight, you can either remove the component, or disable it, whichever is most convenient. And, if you're a handy coder, it's trivial to integrate the outline into a different workflow because it's literally 1 line of code to add or remove a whole hierarchy.

FILL CONTROLS

Fill Color is the color all Visible pixels will blend toward. You can control the amount with Fill Blend.

(PRO ONLY) Fill Color Hidden is the color all pixels hidden behind another object will blend toward. You can control this with Fill Blend Hidden.

With the Hidden controls, you can get a nice X-Ray effect independently from the visible part of the object.
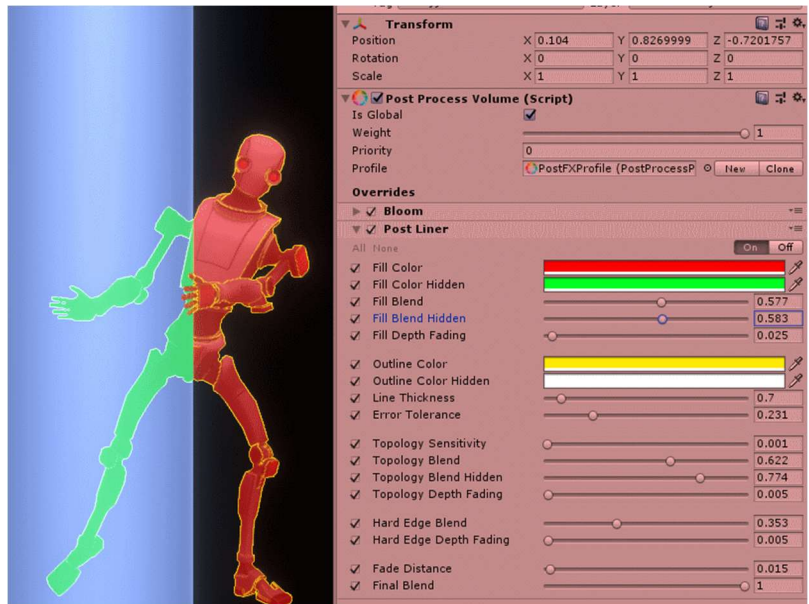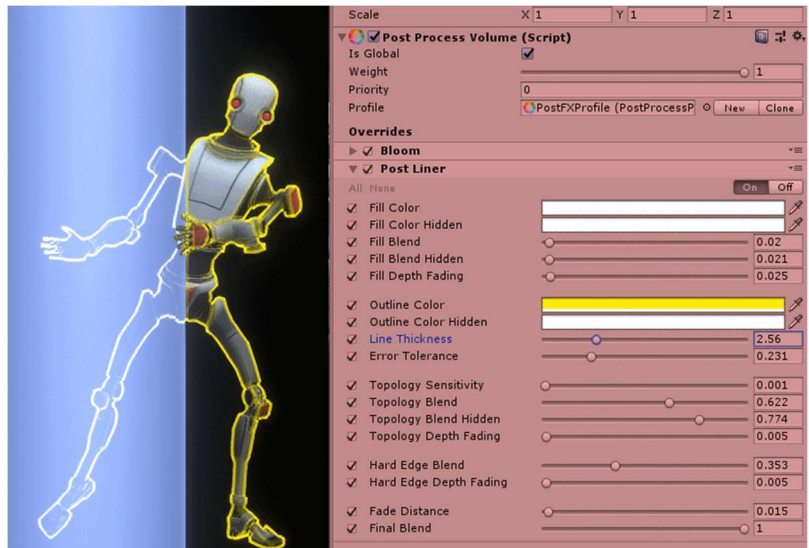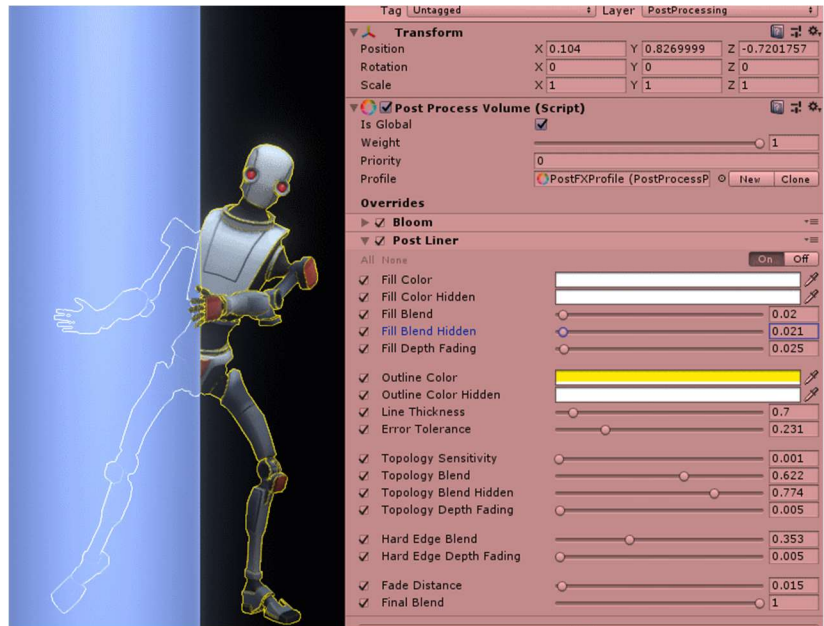
OUTLINE CONTROLS **(PRO ONLY)**

Outline Color controls the thin outline color and can be set to any color you like.

Outline Color Hidden controls the thin outline color when the pixels are obscured by another object, as is show on the left side of the image.

Error Tolerance controls how much error in depth values are allowed to be considered "visible" versus "hidden". Due to numerical imprecision of depth buffers, and Near/Far plane settings on cameras, I can't just pick the correct value for you. If set too low, the object will appear hidden all the time. If set too high, the object will appear visible all the time and try to poke through other objects.

Line Thickness controls how wide the outlines will appear, but it is always inside the pixels covered by the model, it will not grow the size of your object.

Notice outlines work even when the object self-intersects, as with Space Robot Kyle's arm reaching across his body? This is because we use both depth and normals to figure out when pixels should be outlined. But we give you controls for how much to use each effect separately, to tune it the way you want it to look.
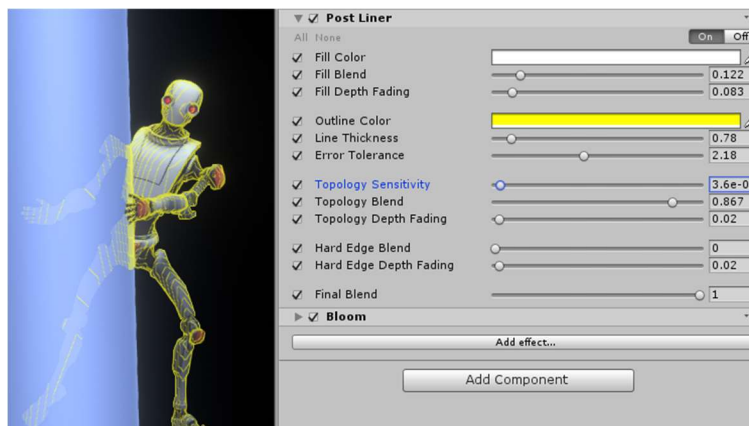
TOPOLOGY CONTROLS **(PRO ONLY)**

Topology is predominantly the effect responsible for the exterior outline of the object.

Topology Sensitivity relates to the depth values of the object. Very low values are overly sensitive to changes in depth and result in an appearance similar to a topological map (shown right).

Topology Blend controls how much this effect will contribute to the outline.

On animated characters or moving cameras, this will probably swim in an unflattering way. However, larger values of the slider allow softening of the depth effect between the object and itself, or between the object and nearby intersecting objects, and is how you get the nicest outlines. The Topology Blend controls the amount of this effect you will see blended into the final color.
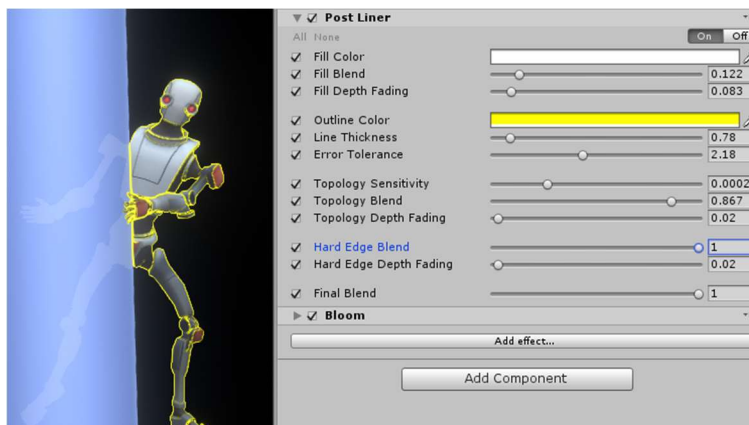
HARD EDGE CONTROLS **(PRO ONLY)**

The Hard Edge effect is responsible for the interior edges on an object.

Hard Edge Blend controls how much this effect will contribute to the outline.

If you have a completely smooth object, this has minimal effect, but for most objects it helps define the interior shape a little better, kind of like a rim light. Large objects especially benefit, as the exterior silhouette lines might be quite far from the center of the screen where your player may be focusing. Turning on the outline color for interior edges can help illustrate the highlighting function.

(ALL) DEPTH FADING CONTROLS **(PRO ONLY)**

In order to control the fading-out of the effects in the best possible way, each part of the effect can start fading at different distances. Outlines are often too noisy at a distance, but the Fill can look very nice quite a long way off. The Hard Edge outlines tend to be the noisiest, and thus may be better to fade out sooner. We built **Post Liner Pro** to give you all the controls you could ask for.

All the Depth Fading controls indicate a position between the Near and Far plane where that specific part of the effect will **start** fading out. There is a single master Fade Distance that specifies the distance over which the fade will occur, also specified as a fraction of the distance between Near and Far plane (so 0.10 is 10% the distance to the far clip plane).

The best way to figure this out is to:

1. Set the master Fade Distance to 0
2. Add an object to the outline set in on the Camera with *Post Liner Renderer*
3. Switch to Game View
4. Move the object away from the camera until the outlines start looking speckly or shimmery
5. Carefully adjust the Depth Fading sliders until the outline just barely turns off
6. Move the object away again until you want the effect completely gone
7. Carefully adjust the Fade Distance up until you just barely see the effect.
8. As you move the object back toward the camera, each part of the effect should fade in nicely!

Obviously, we'd set this up for you if we could, but the Near/Far settings are different in every Camera, the resolution of your displays are different on every console or mobile device, and the scale of your objects are going to be different as well. It's something you will have to tune for your specific situation. But it's quite easy to do.

ANOTHER EXAMPLE

Just for fun, here is another example of how you can use just outlines to get a clean X-Ray effect. It took just seconds to get this look.
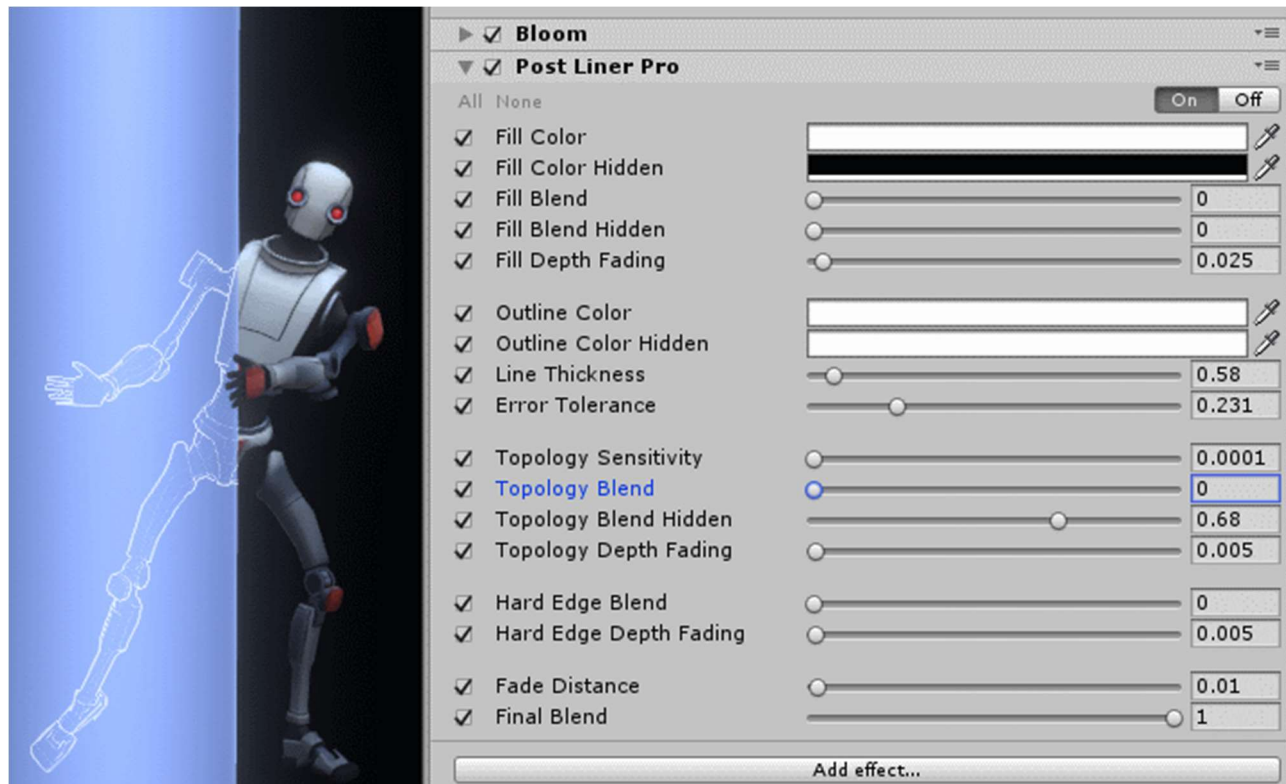
SUPPORT

Please read all the documentation. We put a lot of effort into it, and hope that it exceeds your expectations. In the event you have further questions, please check the following web pages for more details about this asset:

Our Website: https://reachablegames.com/unity-assets/

Unity Forum: https://forum.unity.com/threads/post-liner-pro-and-post-liner-free.703229/

If you find that none of the above can answer your question, you may contact us at support@reachablegames.com, but know that we always handle support requests first that include:

1. **Invoice Number**
2. **Unity Version**
3. **Asset Version**
4. Links to screenshots or small sample projects on DropBox or similar sharing site describing the problem.
5. Kindness. If you are mean, rude, harassing, or hateful, do not expect a response.

As a matter of common sense, we do not offer support to free customers except as time permits.

Finally, if you are looking for a feature that is not currently supported, understand that we are a business and get many such requests. If you need a custom feature that is important enough to your product to pay for its development, contact us about it.

ABOUT US

Reachable Games is located in the beautiful hill country of Austin, Texas USA. It was founded by Jason Hughes, who has been a professional game developer since 1995, at Origin Systems. He has worked on many AAA games and with many recognizable companies. As a generalist, Hughes has worked on nearly every kind of game platform in every capacity—from graphics tools to AI to UI/UX to game design to shader writing to database management to networking and server development. It turns out this is the right skillset to help improve the Unity development experience for other developers.

We currently have several other assets on the Asset Store. For what it's worth, they are all built because we are working on projects of our own and both need and use them on a daily basis. If you think this one is great, chances are the others will help you out too.

RELEASE NOTES

V1.7 MARCH 27, 2021

- Fixed some warnings that were introduced by changes in Unity from 2019 onward.

V1.6 JANUARY 1, 2021

- Revised the error handling for UnityWebRequest now that the interface changed in 2020.2.

V1.5 DECEMBER 12, 2020

- Simplified version checking popup.

V1.4 JUNE 3, 2020

- Worked around a hard editor crash introduced in Unity 2019.3.
- Clarified a few things in the documentation.

V1.3 DECEMBER 2019

- Fixed Inspector GUI with pro skin to be more readable.
- Improved far plane pixel detection to be more robust on Mac and iOS.
- Fixed rendering matrix when using cameras that cover only part of the screen.
- Fixed issue where a directional light was needed to put the camera into DepthTexture mode. Now you can use Post Liner with any or no lights in the scene.

V1.2

- Added basic functionality so it can preview in SceneView tabs in the Editor. (Note, settings in that camera will NOT look the same as those in GameView, because the Camera settings differ.)
- Added independent control over hidden pixels for Fill Color.
- Added independent control over hidden pixels for Outline Color.
- Added independent control over hidden pixels for blend contribution for Fill and Outline effects.
- Shader is now in Resources folder, so built clients will correctly find it.

V1.1

- Fixed null exceptions if an object is deleted while outlined.
- Minor documentation fixes
- Rearranged folder structure to avoid file conflicts when Post Liner Pro is installed afterward. (You still must remove the Free version from the project before it will compile.)

V1.0

- Initial Release