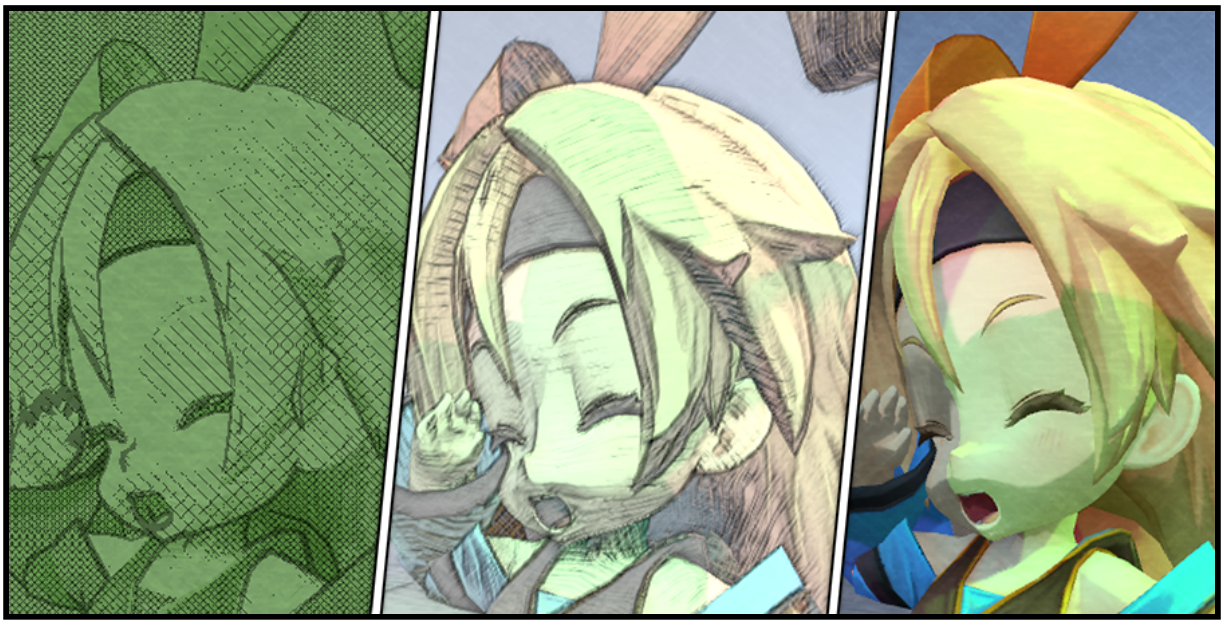

ToonSketch

A non-photorealistic shader pack from... Ikonoclast

User Manual [v2.0]

ToonSketch is a non-photorealistic shader pack comprising both a set of material shaders and a post-processing shader that allows for many different graphical styles.

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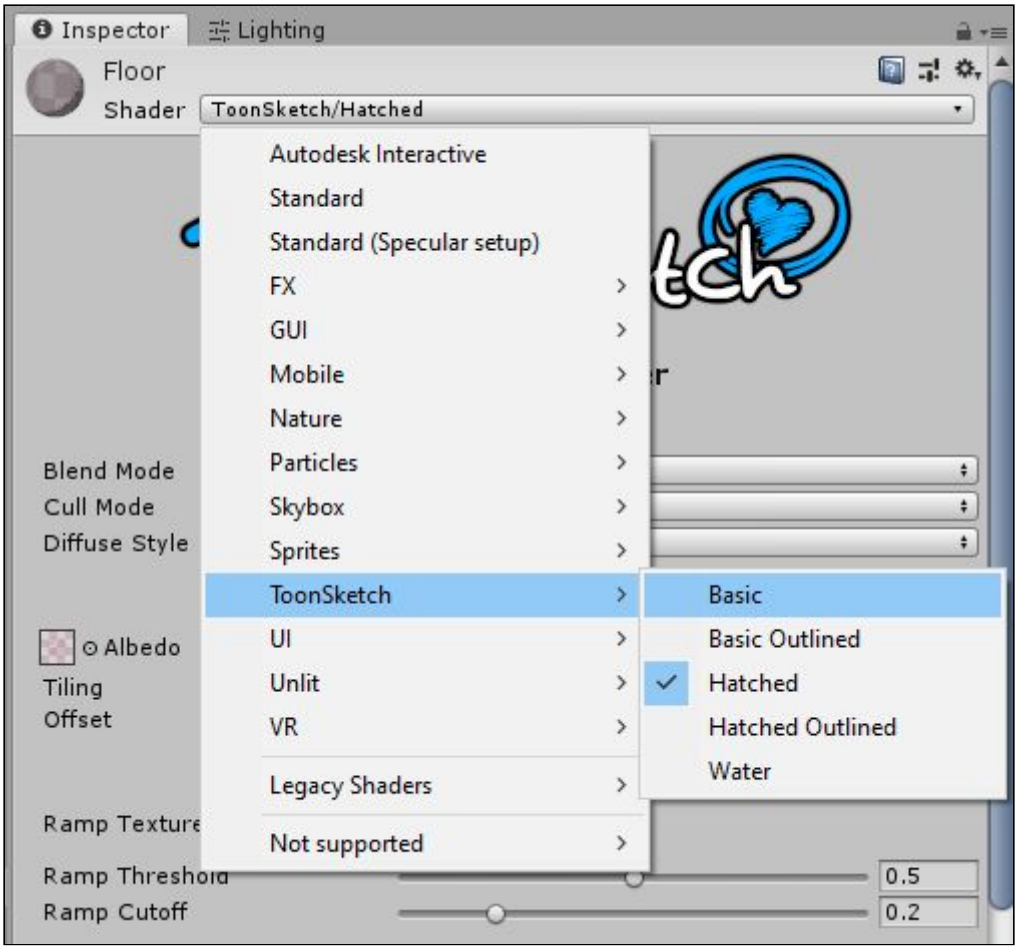
Material Shaders

The material shaders can be used just like any standard material shader in Unity and offer a number of different options for achieving various non-photorealistic styles from support for different light ramping and hatching shading effects.

Material Usage

To use the shader, first create a new material asset or select an existing material asset, and then from the shader selection dropdown navigate to *ToonSketch* and select from the available shaders as shown below…



Once a shader is selected, you will see the controls for the material shader in the Inspector window, these are broken into distinct sections outlined below…

Blend Mode

Blend mode determines how the material will be rendered in the scene and the options are as follows…

Opaque

This is the default blend mode where materials will be rendered with any alpha channel in the main texture and color ignored.

Cutout

This is a blend mode where the alpha channel will be treated as a hard cutoff point between opaque and invisible.

Fade

This is a blend mode where the alpha channel will be used to fade the material and any lighting on the surface.

Transparent

This is a blend mode where the alpha channel will be used to fade the material but lighting on the surface will remain even in transparent areas, useful for glass and other similar materials.

Cull Mode

Cull mode determines which, if any, faces of the object will be ignored and not rendered. The standard option is back face culling, but if you require double-sided faces (for example, when using a material on a plane) you can disable culling entirely.

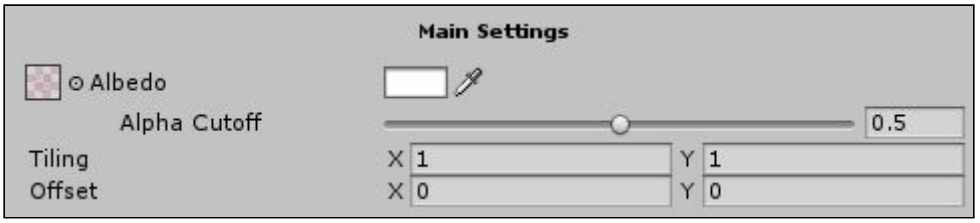
Diffuse Style

The diffuse style determines if the shader will soften the lighting output or not, as seen in the comparison image to the right.

The leftmost output is a two band ramp with *“Hard”* selected and the rightmost is the same ramp with *“Soft”* selected.

This causes the leftmost output to have much stronger banding between light and dark areas on the material.

Main Settings



Albedo

The albedo texture will be used as the base colour of the material. The albedo colour will tint the texture output if one is assigned or be used as the base output colour otherwise.

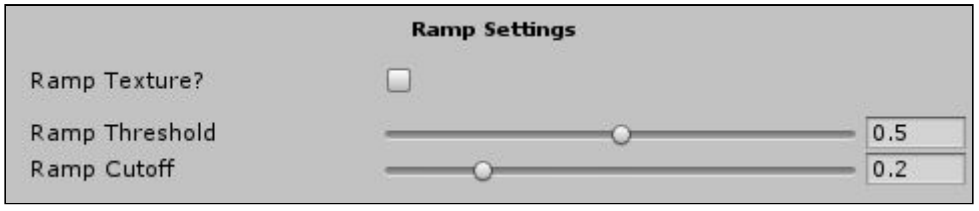
Alpha Cutoff

This option is available when Cutout is selected under Blend Mode and determines where the cutoff between opaque and invisible is made based upon the alpha channel of the albedo texture and colour.

Tiling and Offset

The tiling and offset values will be used to set the tiling scale of the texture UVs and the offset amount of the base UV values.

Ramp Settings



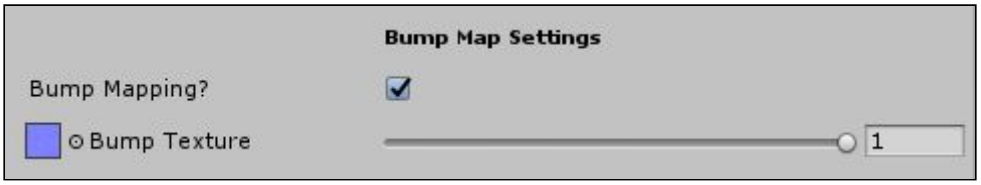
Ramp Texture

The ramp texture is used to control how lighting is mapped to the material surface and can be used to generate many different effects such as distinct shading bands or other different shading styles. ToonSketch includes three example ramp textures which can be seen in the demo and found under *“Assets/ToonSketch/Shared/Textures”*

Ramp Threshold/Cutoff

If you select to not use a ramp texture you will be given the following options to control the light ramp, where threshold sets the amount of light at which the ramping occurs and the cutoff amount controls the amount of falloff.

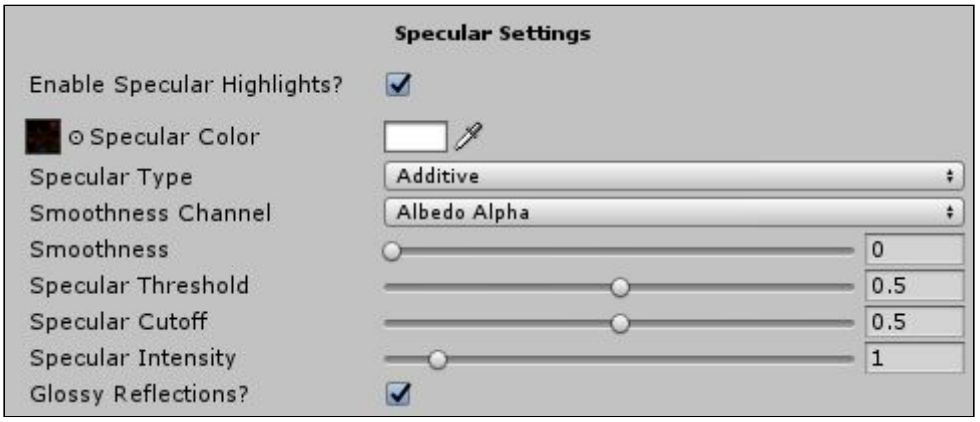
Bump Map Settings



Bump Texture/Strength

The bump map texture will be used for bump mapping on the material surface and the strength value will determine how strong the effect is.

Specular Settings



Specular Color/Texture

The specular color and texture settings will be used for specular lighting when enabled.

Specular Type

The specular type setting determines how the specular color is calculated and applied to the final output.

Additive

When set to additive mode, the specular color will be added on top of the final output color.

Multiply

When set to multiply mode, the specular color will be multiplied by the albedo color/texture before being applied to the final output color.

Smoothness Channel/Value

This determines how smooth the surface is when calculating the specular highlighting. A smoother surface produces smaller highlights compared to a rough surface.
The smoothness channel setting will determine where the base smoothness value is taken from, whether that be the alpha value of the albedo texture/color or the specular texture/color. The smoothness setting will then multiply this base amount.

Specular Threshold/Cutoff

This controls the output of the specular lighting, where threshold sets the amount of light at which specularity occurs and the cutoff amount controls the amount of falloff.

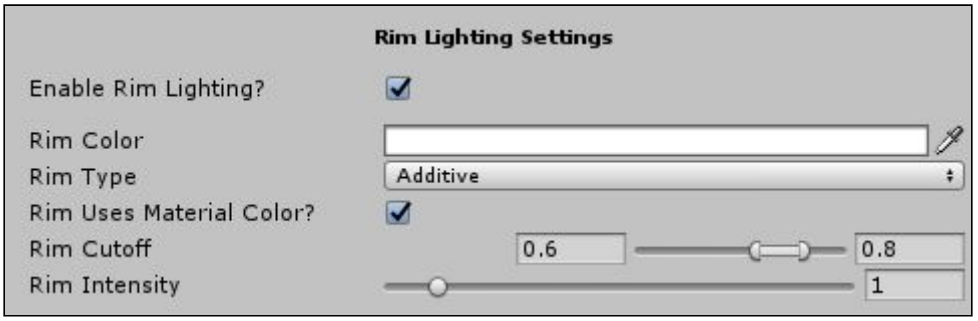
Specular Intensity

This controls the intensity of the amount of specular lighting in the final output color.

Glossy Reflections

This setting will enable gloss reflections on the specular highlights from sources such as scene ambience, etc.

Rim Lighting Settings



Rim Color

The rim color setting will be used to determine the color of the rim lighting when applied.

Rim Type

The rim type setting determines how the rim light color is calculated and applied to the final output.

Additive

When set to additive mode, the rim light color will be added on top of the final output color.

Multiply

When set to multiply mode, the rim light color will be multiplied by the final output color before being applied.

Rim Uses Material Color

This setting determines if the base rim light color is affected by the material output color or not.

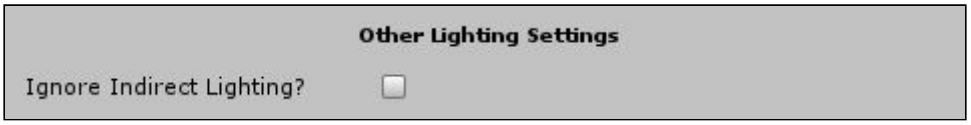
Rim Cutoff

This controls the cutoff points for the rim lighting, determining how much the rim light will diffuse across the surface and the amount of falloff.

Rim Intensity

This controls the intensity of the amount of rim lighting in the final output color.

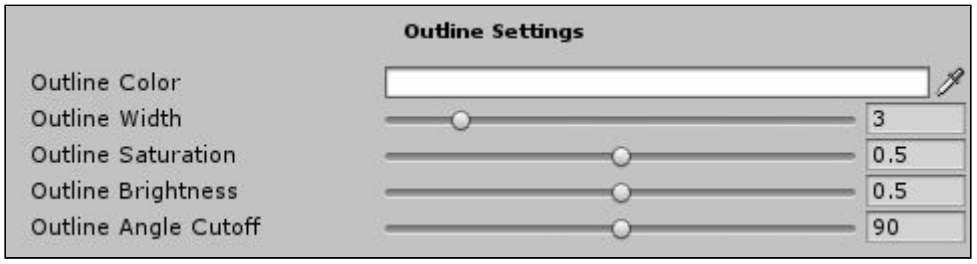
Other Lighting Settings



Ignore Indirect Lighting

This setting controls whether the shader will ignore indirect lighting sources such as ambient light, etc.

Outline Settings



Outline Color

The base color of outlines, which gets applied to the final output color.

Outline Width

The outline effect is generated by extruding the original output mesh, the width setting controls the size of the outlines by controlling the width of the extrusion.

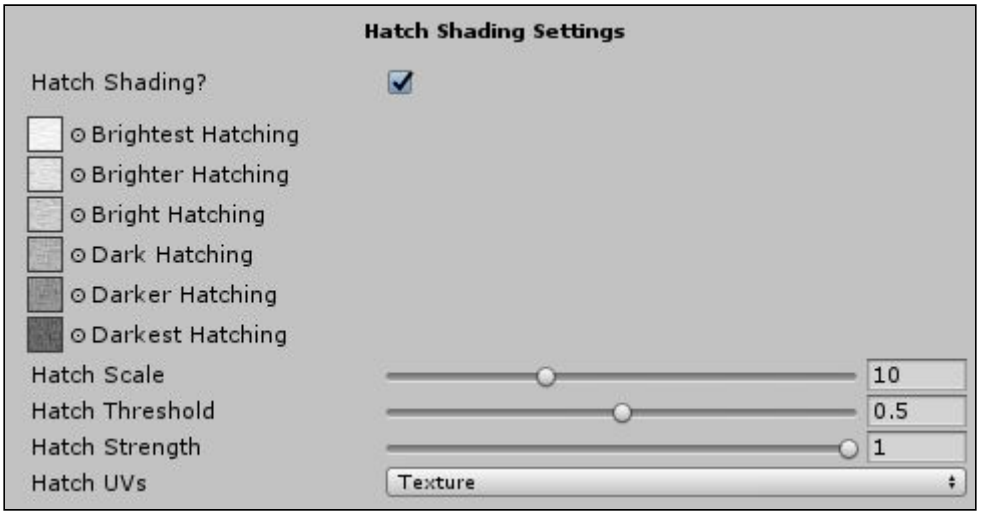
Outline Saturation/Brightness

This controls the color saturation and brightness of the final output color applied to the outline effect.

Outline Angle Cutoff

This controls at what viewing angle the outlines will be culled, so as to control how much of the outline can be seen from certain angles.

Hatch Shading Settings [Core Only]



Hatch Textures

The various light/dark levels (from brightest to darkest) have texture slots which will be used to determine how the hatching strokes should look when applied to the material.

As you can see in the image to the right, the hatching textures used are determined by how light or dark the material is at any given point.

Hatch Scale

The scale of the textures, this allows for the textures used to appear larger or smaller on different materials. This can be seen in the image with different materials having different scale values; such as the hair, skin, and clothes.

Hatch Threshold

The threshold setting determines the amount of light needed on a surface to be considered “brightest” or “darkest” with higher threshold amounts causing stronger dark area hatching and less bright areas and lower threshold amounts causing vice versa.

Hatch Strength

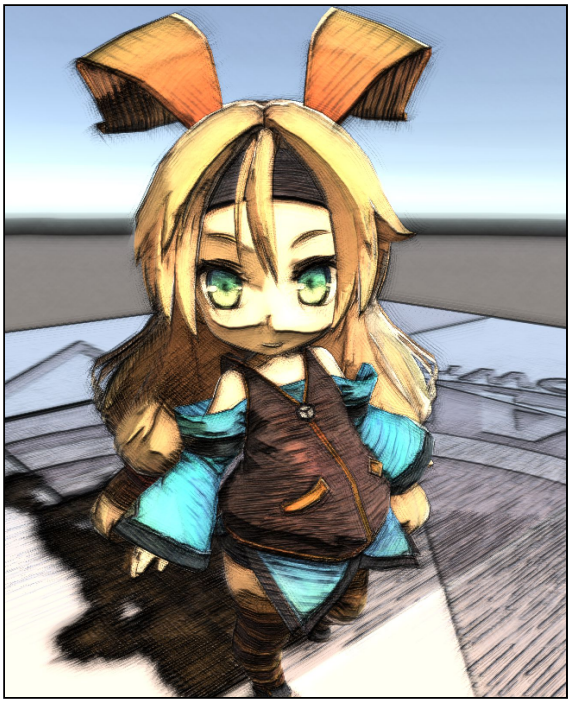
The strength setting determines how heavily the hatching textures will be blended with the surface colour with higher strength values causing the hatching output to appear heavier and darker.

Hatch UVs

This setting is used to determine if the texture UVs of the material should be used or if world coordinates should be used instead to determine placement of the hatching effect.

Advanced Settings

Advanced settings contain the standard Unity advanced rendering options from the Standard shader.



Post-Process Effects [Core Only]

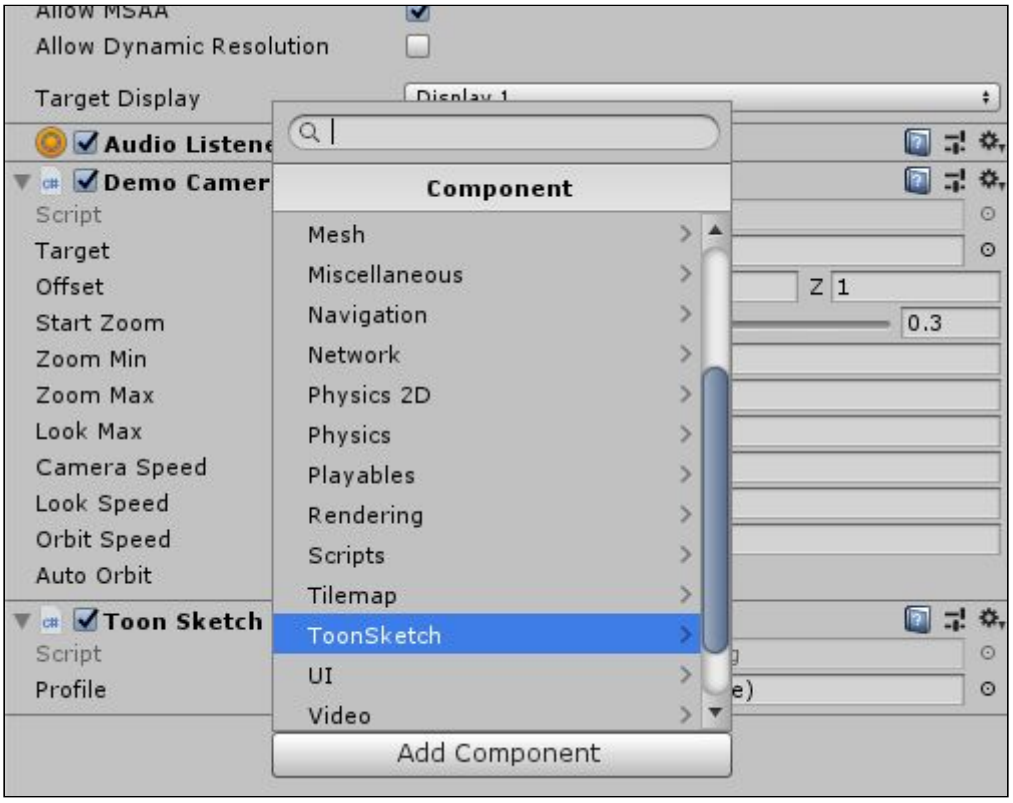
The post-processing shader can be used by assigning a component to any GameObject with a Camera component and post-processing profiles can be used to achieve a variety of non-photorealistic effects such as retro hatching, outlines, and canvas texturing.

Shader Usage

Unity by default will strip unused shaders, which can include post-processing shaders used by ToonSketch, so we need to ensure that Unity compiles the shader and includes it in any builds to avoid rendering errors. You can do this by navigating to *“Project Settings > Graphics”* and making sure that ToonSketch’s post-processing shader (found under *“Assets/ToonSketch/Core/Shaders/PostProcess”*) is included in the list of *“Always Included Shaders”*

Component Usage

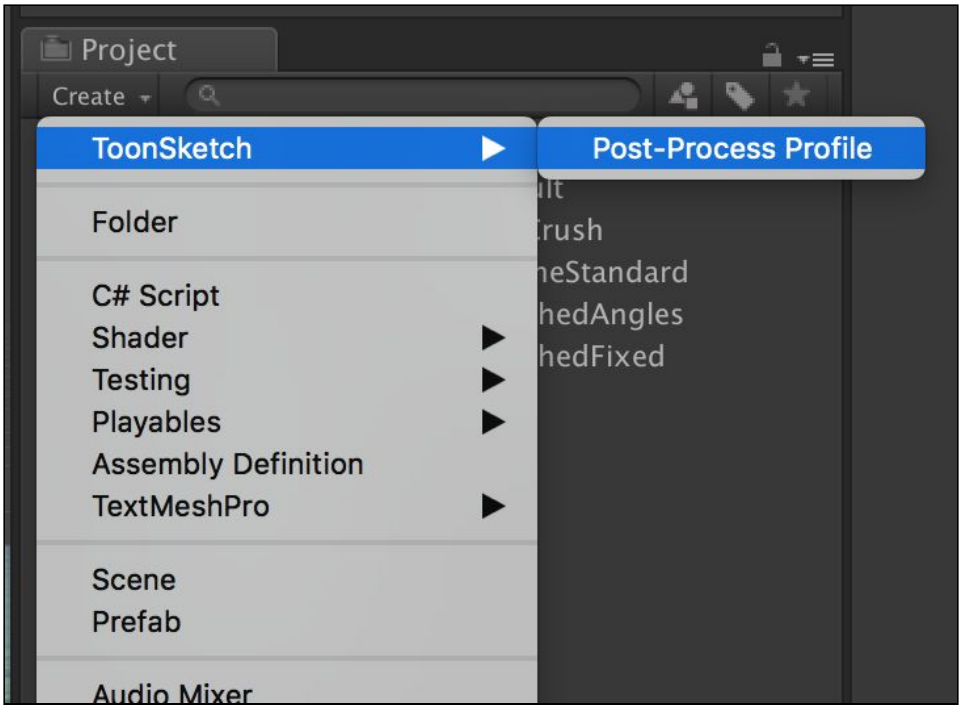
To use the shader, select a camera in your scene and attach the *ToonSketch* post-processing component to it under *“Add Component > ToonSketch > Post-Process Effects”* as shown below…



Once the component is selected, you will see the option to add a profile in the Inspector.

Profile Asset Creation

The component requires a post-processing profile to be assigned, which you can create from the Project window by selecting *“Create > ToonSketch > Post-Process Profile”* as shown below…

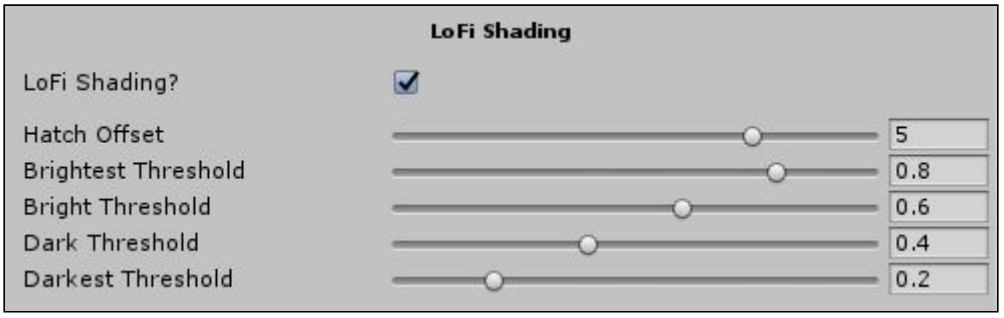


Once the profile is created and selected you will see the controls for the post-process shader in the Inspector window, these are broken into distinct sections outlined below…

LoFi Shading

The LoFi shading effect applies a hatching effect to the screen output meant to emulate old hardware shading effects and comes with a number of options for customising the output.

Options



Hatch Offset

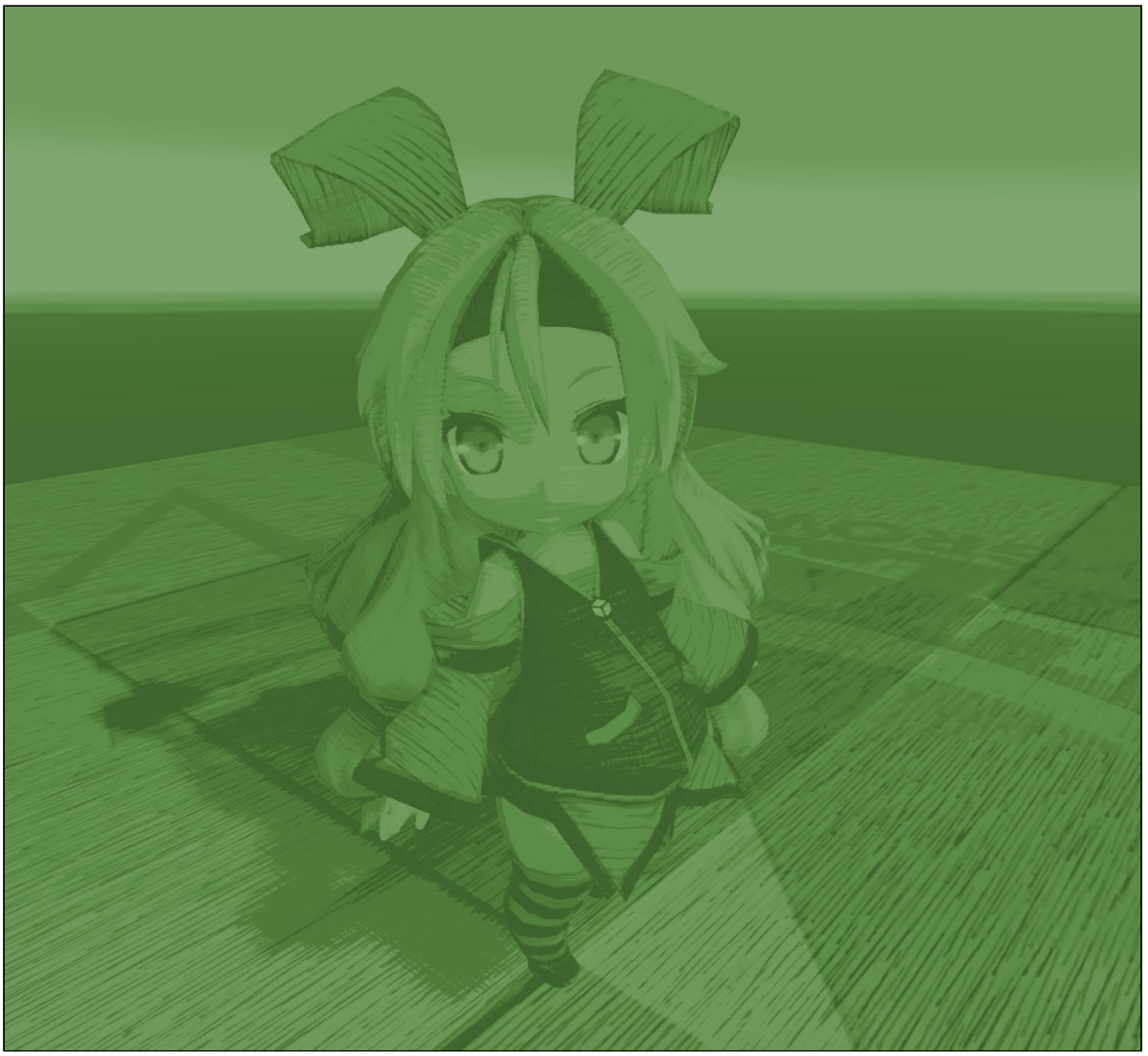
The hatch offset setting determines how far apart the lines of the hatching effect should be from each other on screen. This has the effect of making the effect seem denser when the offset is lower.

Threshold

The threshold settings determine the amount of light needed on a surface to be considered as within each band of light/dark value. The threshold is a value from 0 to 1 based on the normalized luminance of each sampled area. The lower the threshold the more light will fall within that category.

Color Crushing

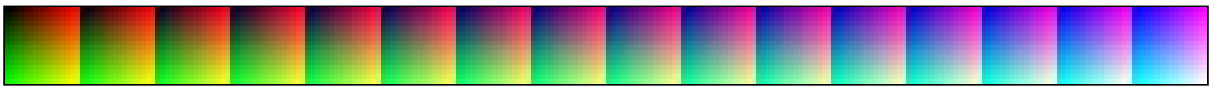
The color crushing effect is a color substitution effect based on a lookup texture which tells the shader what colours to use based on a limited palette.



Options

Palette Texture

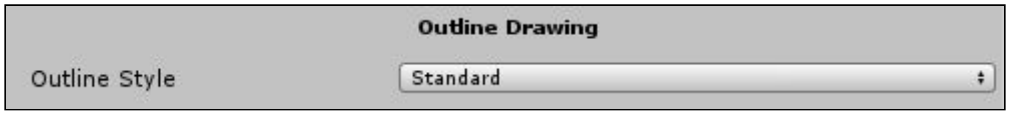
The palette texture is the lookup texture *(LUT)* to use for colour replacement, and is based on a standard palette which can be found in the Assets folder under *"ToonSketch/Core/Textures/Effects/lut-default"* and looks like the following…



The LUT used in the above image of the effect is as below…

This LUT was designed to mimic old handheld hardware and combines with the LoFi shading effect in one of the demo profiles.

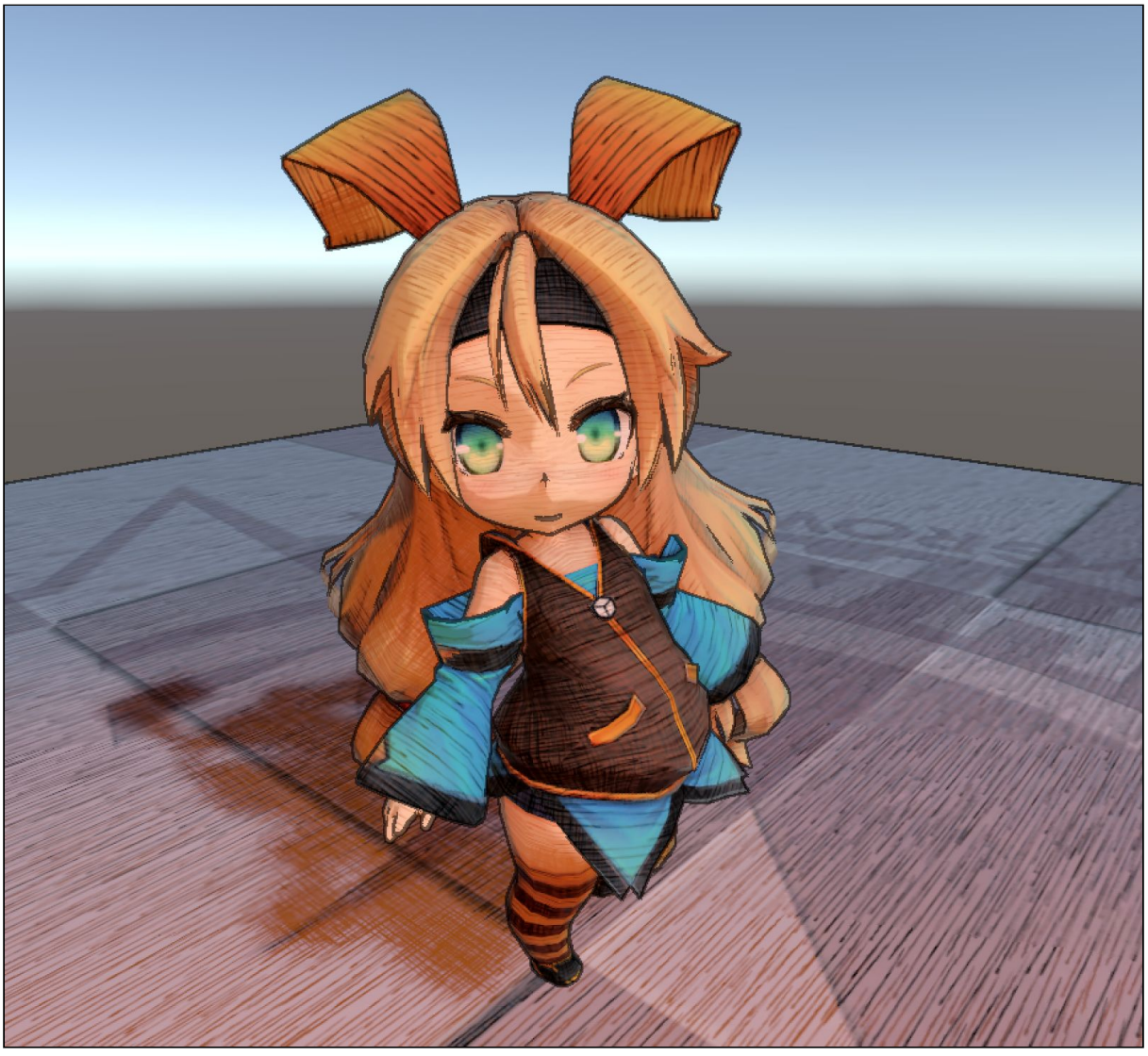
Outlines



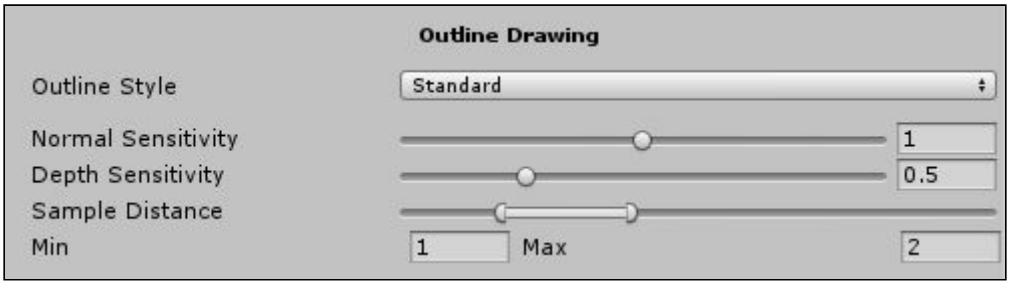
The outline effect has a number of different style options available which are described below…

Standard Outlines

The standard outlines are the traditional outline shader effect often used in non-photorealistic games and uses the depth and normal buffer of the camera to detect edges and render them with lines.



Options



Sensitivity

The sensitivity settings determine how sensitive the edge detection algorithm will be towards both the depth and normal output of the scene and thus increase or decrease the number of outlines generated.

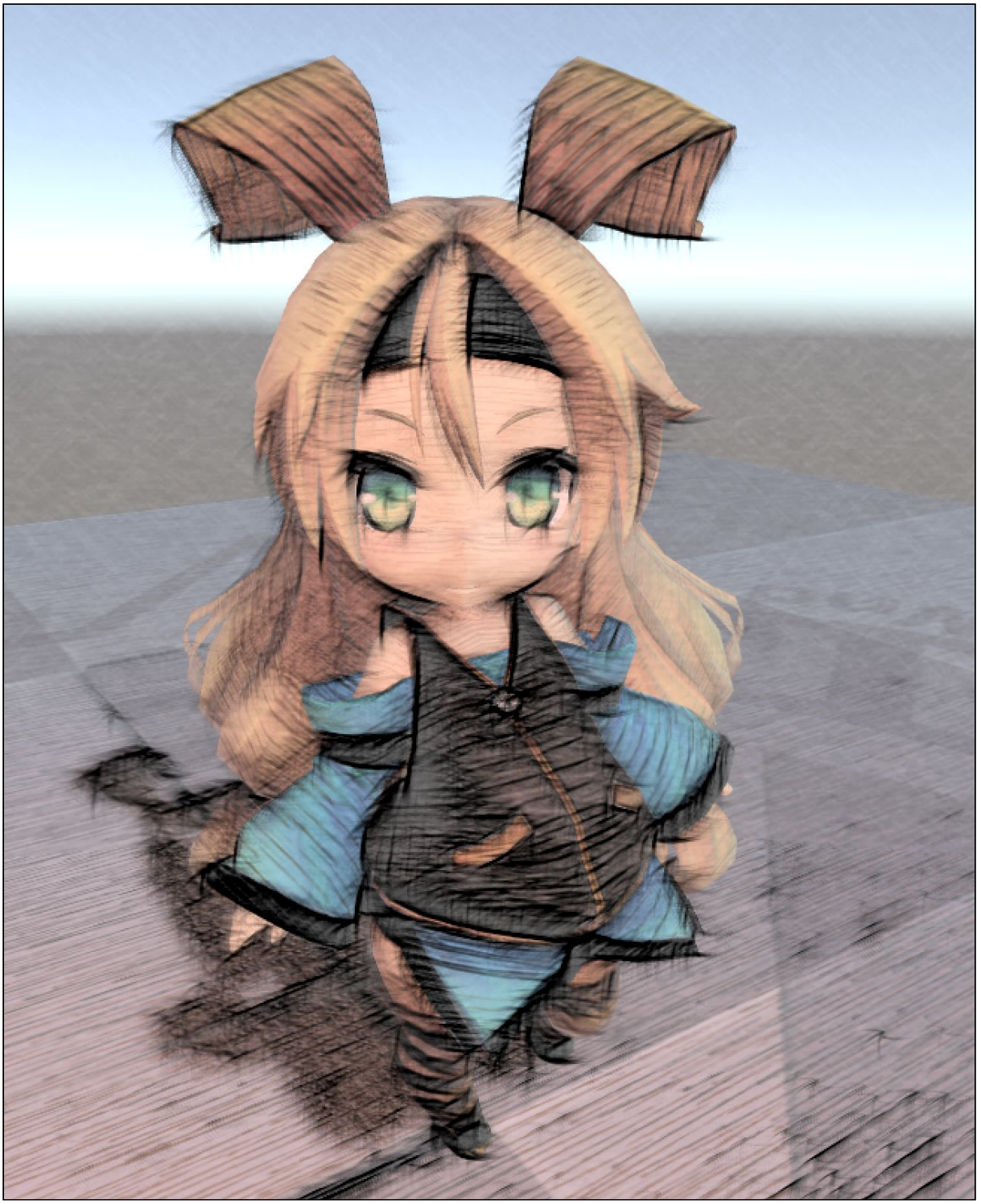
Sample Distance

The minimum and maximum sample distance setting determines the thickness of the outlines, with the outlines transitioning from minimum to maximum thickness based on the general proximity of the object to the camera view.

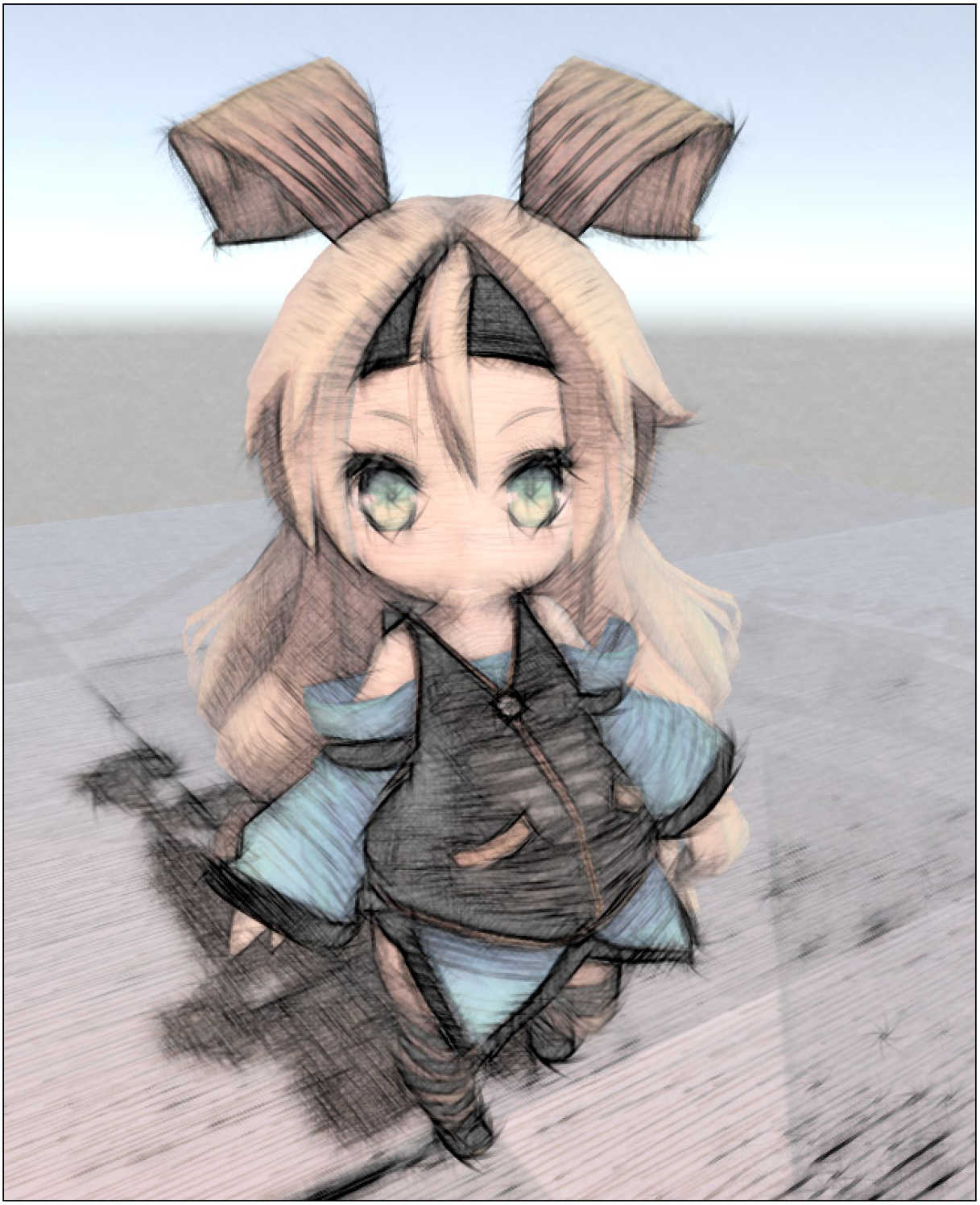
Sketched Outlines

Sketched outlines offer an outline effect which emulates the appearance of pencil sketching when generating outlines of the scene output.
There are two options for the sketched outline style; “Fixed” and “Angled” the fixed style utilises a fixed number of angles and is designed to use less GPU resources than the more taxing angled effect shader, however the angled style allows for a customisable amount of angles to be used during the sampling which can improve the final look of the outlines but does require more GPU resources.

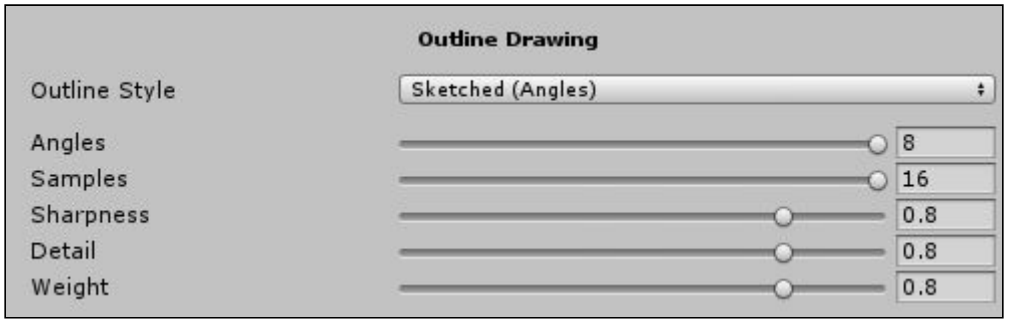
Fixed Style



Angled Style



Options



Angles

The angles setting is available when using the angled style of the sketch outline effect and determines the number of different angles the effect will use to sample points for sketching, increasing this number has GPU overhead but will cause more sketched lines to be drawn from each point. This setting is fixed to 4 in the fixed style variant.

Samples

The samples setting determines the number of samples to take at each point processed by the shader, increasing this value will increase the fidelity of the end result of this effect but carries a significant GPU overhead.

Sharpness

The sharpness setting determines the sharpness of the lines rendered by the effect. When this value is high the lines will be more tightly matched to the original edges of the objects, whereas when set low the lines will be more offset and softened from the original edges.

Detail

The detail setting determines how much of the scene output is rendered as part of the sketch effect. Setting this value low will mean that less outlines are generated and setting it high will mean more of the scene will be rendered as part of the sketch outlines.

Weight

The weight setting determines how heavy the outlines are rendered, increasing this value will cause the effect to seem darker and the outlines more firmly drawn, decreasing this value will make the outlines seem much softer and drawn with a lighter touch.

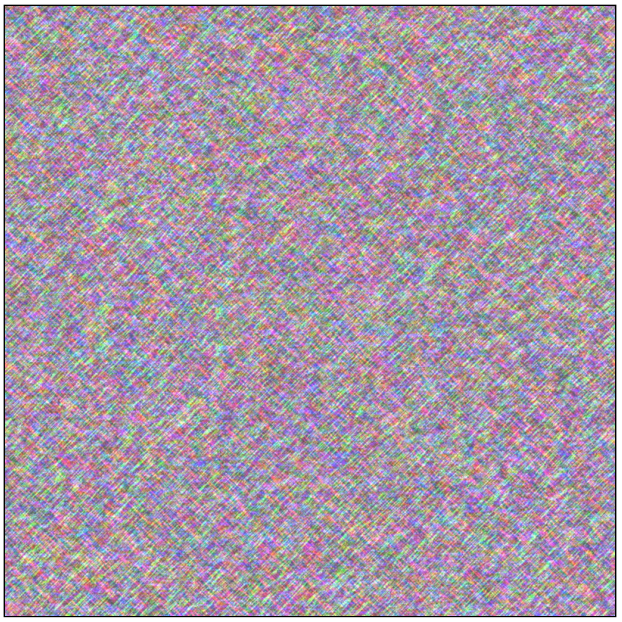
Canvas Texturing

The canvas texturing effect allows you to use a displacement texture to apply a textured overlay to the scene output. A displacement texture uses each channel of the texture (RGB) to apply an overlay in screen space and can then be animated to create perturbations in the texture.

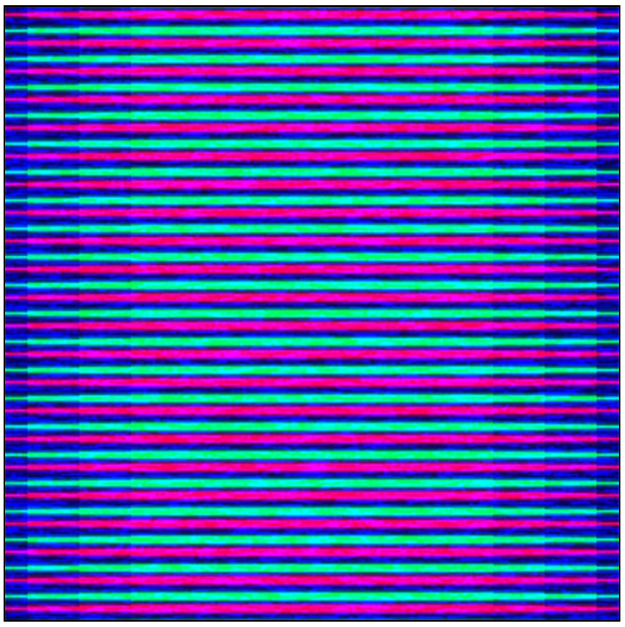
Options

Canvas Texture

The canvas texture is a displacement texture which will be applied to the final scene output. The RGB channels of the texture will be applied to the output and an example can be found in the Assets folder under *“ToonSketch/Core/Textures/Effects/canvas-basic”* and looks like the following…



Each channel represents a different offset that will be applied to the output.
The canvas texturing effect can be used for a number of different effects and not just canvas, such as the monitor effect used in the *LoFiCrush* post-process profile, which looks like the following…



This texture applies a scanline effect in the R and G channels and a noise effect in the B channel.

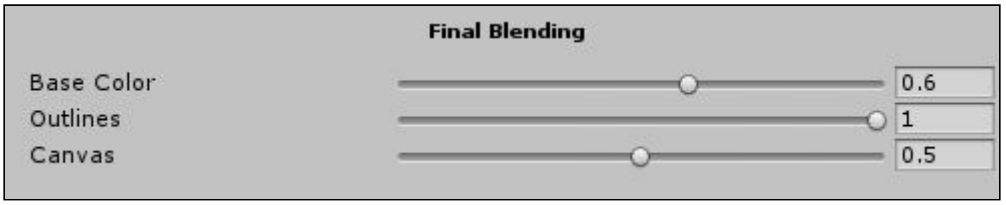
Weight

The weight setting is used to determine the strength with which the displacement is performed on the scene output, with higher values meaning the canvas texture will be more noticeable on screen.

Jitter Speed

The jitter speed setting is used to cause the canvas texturing to change offset by a random amount at intervals of the value set. This causes the texture to appear to be shifting and moving. Setting this to 0 will disable the offset jitter.

Final Blending



The last options available are blend amounts for each of the enabled effects along with the base colour output of the scene. These values will fade in and out the different colour and effect layers so you can tweak the final appearance in a number of different ways to combine different effects.

Thank You & Contact

Many thanks for checking out *ToonSketch* and we hope that you find this set of shaders useful.
If you have any questions about this product or encounter any bugs please email us at: hello@ikonoclast.love
Also please feel free to email us at the above email address if you end up using ToonSketch in your own releases, we are always interested in seeing how people make use of the shaders and what visual styles you decide to create~

Thanks~! ❤

http://ikonoclast.love/