RealToon

V 5.0.7

User Guide

(V13)

(RealToon Shader)

It's an AAA Anime - Toon Shader/Cel Shading Shader for Unity3D.

The goal/aim of this shader is to make your characters or objects shading to look as close to real anime or cartoon as possible in real-time and fast.

Use RealToon Shader for games, animations & illustrations/art.

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[Shaders]

A. Types:

a. Default
**RealToon Default Shaders.*
**Available for both unity default standard rendering pipeline, LWRP/URP & HDRP*

b. Lite
**RealToon Shaders Lite Version, for mobile or animation/games that don't need the other Default – high end features.*
**Currently available for unity default standard rendering pipeline.*

c. Tessellation
**RealToon Tessellation version shaders.*
**Currently available for unity default standard rendering pipeline.*

B. Shaders:

a. **Default –** Default RealToon Shader.
b. **Fade Transparency -** RealToon Shader with fade or smooth transparency.
c. **Refraction -** Refraction Shader.

C. Effects:

a. **Sobel Outline –** An edge detection or outline post processing effects.

[How to use RealToon]

A. Use RealToon:

a. Create a material.
b. Select the material you've created and change the shader to RealToon shaders you want to use.
c. Drag the material to your object.
d. Enable/Disable the features you don't want to use.
e. Adjust **Self Shadow Threshold** if needed to hide Received Shadow weird edge.
f. Adjust **Reduce Shadow** if needed to reduce unwanted self cast real-time shadow artifacts.
g. Adjust your **Light Source** if needed.

B. Use RealToon Effects:

a. Select a camera.
b. Add component -> RealToon -> Effects.
c. Select the effect/s you want to use.

C. Use Frame By Frame Rendering:

a. Select a camera or object.
b. Add component -> RealToon -> Tools.
c. Select the type of **Frame By Frame Rendering** you want to use.

D. Use Custom Shadow Resolution:

a. Select a light source.
b. Add Component -> RealToon -> Tools.
c. Select **Custom Shadow Resolution**.

[Important Notes/Tips]

* If you want high performance game, Change **Shadow Type** to **Soft Shadow** or **Hard Shadow**, Change **Shadow Resolution** to **Low** for softer **Received Shadows** or just change **Shadow Type** to **No Shadow** and use **Self Shadow** instead,
- Or do your own high performance settings/preference.

*For Best Anime/Toon Look (For Animations & Illustrations/Arts), Adjust Light **Bias** to 0.01, Change **Shadow Type** to **Hard Shadows** and change **Shadow Resolution** to **High** or **Very High Resolution.**
- Change also **Shadow Projection** to **Close Fit**, **Shadow Cascade** to **Four Cascades** and adjust **Cascade Splits** until you get the highest quality shadow**. (Edit-> Project Settings -> Quality).**
- Adjust also **Shadow Distance** for you to see all shadows in the scene**.**
- If you want custom shadow resolution, just add the included **Custom Shadow Resolution** script to your light source. **(Add Component -> RealToon -> Tools -> Custom Shadow Resolution)**

*For clean shade, use ***Smooth Object Normal*****.** (This feature is still experimental but you can use it. A-bit tricky to use but the result is great.) (Useful for anime/cartoon style clean shade face.)
- See page 23 – V for tutorial on how to use it.

* Don't adjust ***Self Shadow Size*** less than 0.85 if ***Received Shadows*** is turned on in your object because ***Received Shadows*** weird edge will be visible.

*You can use **Directional Light** as ambient light or you want the shadow to be affected by lights, just enable ***Light Affect Shadow***.

*If you want to adjust the **Environmental Lighting** intensity in your character/object or you don't want your character/object to be affected by it, just disable ***Receive Environmental Lighting and GI***.

*Adjust ***Light Falloff Softness*** if you want an Anime/Cartoon like light falloff.

*If you want your transparent object have outline, use **Fade Transparency** then enable outline.
- Adjust also the ***Reduce Outline Backface*** to see through.

*If you want your low poly objects or character to high poly and smooth,
Use **RealToon Tessellation Version**.
- Note that tessellation only works on **DX11/12** to up**, OpenGL Core, OpenGL ES 3.1 mobile** & **PS4/XBoxOne** and **Shader Model 4.6** to up.

*You can use ***Self Lit*** for object emission/self illumination, can also use it with post processing/image effects **Bloom**.

- You can also use ***Self Lit*** as Unlit.
*Use ***Overall Shadow Color*** to change the overall shadow color of your object/character.

*Adjust ***Overall Shadow Color*** to color ***Self Shadow*** or ***ShadowT***.

*To be able to see ***PTexture***, adjust ***Overall Shadow Color*** to white or your own color of choice.

*Enable ***Show In Shadow*** if you want ***ShadowT*** to be visible in shadow.
- Note: You need to adjust ***Overall Shadow Color*** or ***Self Shadow Color*** from Black to White or your own color of choice to be able to see it.

*Enable ***Show In Ambient Light*** if you want ***ShadowT*** to be visible in ambient light.

*If you want ***Self Shadow*** intensity to be affected by **Light Shadow Strength**,
Check or enable ***Self Shadow Affected By Light Shadow Strength***.

*If you want a ***Plane*** *or flat* object to have an Outline, just change ***Outline Extrude Method*** to ***Origin*** and change ***Double Sided Outline*** and ***Double Sided*** to ***On*** then adjust ***Outline Z Position In Camera***, example value 0.1.

*If you want a silhouette type outline, adjust the camera's ***Near*** to 0.03 then adjust ***Outline Z Position In Camera.***

*Check ***No Light and Shadow On Backface*** If you don't want the light and shadow showing on the other side of a plane or a face when ***Double Sided*** is ***On***.

*To fix broken outline without editing your imported object again in your preferred modeling software, just click your model in the ***Project Panel/Window*** then click ***Model*** tab in the ***Inspector*** then change ***Normals*** to ***Calculate*** then adjust ***Smoothing Angle*** to 90 or 180 or your own value then click apply.

[Other info]

*You can now reduce self cast real-time shadow of an object – material with RealToon Shader without affecting other objects by using ***Reduce Shadow*** feature.
- Take note, you need to adjust the ***Directional Light*** or ***Spotlight Bias*** to more than 0 when adjusting ***Reduce Shadow (Spot & Directional Light).***

*RealToon now comes with ***Frame By Frame Rendering for*** Animation/Illustration use.
- A simple scripts to render each frame into PNG File.
- Just like tradition animation frame by frame workflow.

*RealToon can receive GI & Sky light/Environment Lighting.
- If you want your object/character to receive GI Lighting, Use Light Probe.
- If you want your object to have real-time reflection, Use Reflection Probe.

*RealToon now supports **Nintendo Switch** and **Xbox One**.
PS4 is already supported but this console needs to test RealToon first to know if it's fully working or not.

*You can now hide Directional, Point & Spot light shadows on an object with RealToon shader without affecting other objects. This feature works just like un-checking ***"Received Shadows".***

*Can now be used in 2D games.

****Fade Transparency*** now has Outline and shadow affected by texture transparent or alpha.

*You can use RealToon V5 in VRChat and VTuber works.

****Self Shadow*** can now be affected by Light Shadow Strength.

*Fog now affects ***Outline.***

*Now includes ***RealToon LWRP version*** for Unity 2018 to later.
*Now includes ***RealToon URP version*** for Unity 2019.3.0 to later.
*Now includes ***RealToon HDRP version*** for Unity 2019 to later.

***RealToon HDRP** now supports DXR/Raytracing.

[RealToon Shader Features & Functions]

["*D:*" means Default Values/Settings]
["N-A in Lite Ver." means Not available on lite version.
[Red Text means New, Blue means re-added]

A. Double Sided *(D: Off)* – Make the other side of a plane object or face visible.

B. Texture Color – Texture and Color of the object.

a. Texture Intensity *(Refraction shader only) (D: 0)* - Intensity of the texture.
b. Texture/Main texture *(D: No Texture)* **–** The main/base texture of your object.
c. Main Color *(D: Gray/ RGB:176)* **–** The main/base color of your object.

Adjust **Main Color to something gray if you want to blend the object to other objects uses **Unity Standard shader** or if it's too bright/over-exposed, just like other toon shader.*
**Use pure white color (RGB:255) if there's no Ambient Light or Environmental Lighting/GI.*

d. Mix Vertex Color *(D: Unchecked)* - To show vertex color or mix vertex color on the object.
e. Main Color In Ambient Light Only *(D: Unchecked) – Main Color will be visible only in ambient light.*

** **Main Color In Ambient Light Only** is useful when doing dual shading/multi shading.*

f. Highlight Color *(D: White)* **-** Highlight or light color on the object.
g. Highlight Power *(D: 0)* - Adjust highlight color power/intensity.

h. Enable texture Transparent *(D: Unchecked)* **–** Enable texture transparent. (If your texture has transparent/alpha).
i. Texture Pattern Style *(D: Unchecked)* **–** Turn main/base texture into pattern style.

C. MatCap

a. Intensity *(D: 1)*
b. MatCap *(D: No Texture)* – MatCap Texture.
c. Specular Mode *(D: Unchecked)* – Turn MatCap into Specular.
d. Specular Power *(D: 1) – Specular power or intensity.*
e. Mask MatCap *(D: No Texture).*

D. Normal Map

a. **Normal Map** *(D: No Texture)*
b. **Normal Map Intensity** *(D: 1)*

E. Color Adjustment *(N-A on Lite Ver)***:**

a. **Saturation** *(D:1) – Adjust the saturation color of the object.*

F. Cutout *(N-A on Lite Ver.)* **–** Cutout transparent.

a. **Cutout** *(D: 0)* **-** The amount of cutouts.
b. **Alpha Base Cutout** *(D: Checked)* **–** If checked, Will use texture/main texture transparent/alpha but if unchecked it will use the color/s of the texture/main texture.
c. **Use Secondary Cutout** *(D: Unchecked):* This will use the Secondary Cutout only.
d. **Secondary Cutout** *(D: No Texture)* – A secondary Cutout.

G. Transparency *(Fade Transparency shader only)* **–** Transparency/Opacity of the object.

a. **Opacity** *(D: 1)* **–** The opacity/transparency of the object.
b. **Transparent Threshold** *(D:0)* - Adjust the Transparent/Alpha Threshold of the main texture.
c. **Affect Shadow** *(D: Checked) (Lite version only)*
d. **Mask Transparency** *(D: No Texture)* **–** Mask the part of the object you want to be affected by the transparency.

**Use Black & White texture or texture with alpha/transparent.*
Black means affected, White means not affected*.**

H. Refraction *(Refraction shader only)*

a. **Refraction Intensity** *(D: 1)*
b. **Main Color Affect Texture** *(D:Unchecked)*

I. Outline

a. **Width** *(D: 0.5)* **–** Thickness/Width of the outline.
b. **Width Control** *(D: No Texture)* **–** *Controls the amount of outline and outline width.*

*****White means 1 or greater, Black means 0.*

c. **Outline Extrude Method** *(D:Normal)*

***Origin** – The extrusion will be based on object center of origin.*
***Normal** – The extrusion will be based on object's normal direction.*

d. **Outline Offset (***D: XYZ:0)- Change outline position.*
e. **Color** *(D: Black)* - Outline Color.
f. **Mix Main Texture To Outline** *(D: Unchecked)*
g. **Outline Z Position In Camera** *(D:0)* – Adjust Outline Z Position in camera space.
h. **Double Sided Outline** *(D: Off)*
i. **Noisy Outline Intensity** (*N-A on Lite Ver.*) *(D: 0)* **–** Noisiness/Distortion of the outline.
j. **Dynamic Noisy Outline** (*N-A on Lite Ver.) (D: Unchecked)* **–** Enable moving distorted/noisy outline.

**If checked, noisy outline will move like animated sketched drawing.*
k. **Light Affect Outline Color** *(D: Unchecked)* – Light falloff & intensity affect outline color.

l. **Outline Width Affected By View Distance** *(D: Unchecked)* **–** Outline width will be adjust by view distance.

**Far view means increase outline width, Near View means decrease outline width.*

m. **Far Distance Max Width** *(D: 10)* - Maximum outline width when far.
n. **Vertex Color Blue Affect Outline Width** *(D: Unchecked)*

J. **Self Lit/Self Illumination/Emission –** Objects own light/light of its own.

a. **Intensity** *(D: 0)* **–** The amount of its own light.
b. **Color** *(D: White)* **–** Objects light color.
c. **Power** *(D: 2)* **–** Objects light strength.
d. **High Contrast** *(D: Checked)* **–** Use high contrast color.
e. **Mask Self Lit** *(D: No Texture)* **–** Mask self lit.

**Use Black& White texture or texture with alpha/transparent.*
**White means affected, Black means unaffected.*

K. Gloss - Glossy effect.

a. **Intensity** *(D:1) – Adjust gloss intensity.*
b. **Glossiness** *(D: 0.5)*
c. **Softness** *(D: 0)* **–**Adjust gloss softness.
d. **Color** *(D: White)* **–** Gloss color.
e. **Color Power** *(D:10)* **–** Adjust color power or intensity.
f. **Gloss Mask** *(D: No Texture)* **-** Mask gloss.

**Use Black & White texture or texture with alpha/transparent.*
**White means visible, Black means not visible.*

L. Gloss Texture – Gloss in texture form/custom gloss.

a. **Gloss Texture** *(D: No Texture)* **–** Texture to use as gloss.

(Recommend): *Use Black & White texture or texture with alpha/transparent and square size.*
** You can also use colored texture but it will automatically turn it to black & white.*

b. **Softness** *(D: 0) – Gloss Texture softness.*
c. **Pattern Style** *(D: Unchecked)* – Turn Gloss Texture into pattern.
d. **Rotate** *(D: 0) – Rotate Gloss Texture.*

**Adjust Gloss Texture Offset while adjusting this.*

e. **Follow Object Rotation** *(D: Unchecked)* **–** Gloss Texture follow object rotation.
f. **Follow Light** *(D: 0) – Gloss Texture follow light.*

M. Shadow – Shadows on the object.

a. **Overall Shadow Color** *(D: Black)*

Change this to White or any color you want if you want* ***Color Shadow Texture**,* ***PTexture*** *&* ***ShadowT (In Shadow)*** *to be visible.*

b. **Overall Shadow Color Power** *(D: 1)* – Adjust Overall Shadow Color power/intensity.

c. **Self Shadow at View Direction** *(D: Unchecked)* – Self shadow follow your View Direction instead of Light Direction.

***If checked, self shadow will follow your view direction, if uncheck it will follow light direction.*

d. **Reduce Shadow (Point Light)** *(D: 0) - Reduce point light self cast real-time shadow.*

e. **Pointlight Shadow Visibility Distance** *(D: 0) – To adjust the Pointlight shadow visibility.*

**When you move the Pointlight away from the object the shadows will disappear, To prevent that change the value of this option.*

f. **Reduce Shadow (Spot & Directional Light)** *(D: 10)-Reduce spot & directional light self cast real-time shadow.*

You need to adjust **Spot light or **Directional light Bias** more than 0 to be able to adjust this.*

g. **Shadow Hardness** *(D:0) (N-A on Lite Ver.) – Adjust real-time shadow hardness.*

**Adjust this if the light shadow type is soft or light shadow is soft.*

h. **Self Shadow & RealTime Shadow Intensity** *(D:1) (N-A in Lite Ver.)*

N. **Self Shadow –** Object's own shadow.

a. **Threshold** *(D: 0.56)* – The amount of self shadow on the object.

Don't adjust this beyond 0.85 if **Received Shadows is turned On in your object because **Received Shadows** weird edge will be visible.*

b. **Vertex Color Green Control Self Shadow Threshold** *(D: Unchecked)*
c. **Hardness** *(D: 1)* **–** Self shadow hard edge or soft.

d. **Self Shadow & Real Time Shadow Color** *(D: White)* – Self Shadow & Real Time Shadow Color.

You need to change **Overall Shadow Color to White so you can able to change this.*
- Self Shadow & Real Time Shadow are merged together.

e. **Self Shadow Affected By Light Shadow Strength** *(D: Unchecked) (N-A on Lite Ver.)*

f. **Self Shadow & Real Time Shadow Color Power** *(D: 1)* – Adjust color power/intensity.

You need to change **Overall Shadow Color to White so you can able to change this.*
- Self Shadow & Real Time Shadow are merged together.

O. Smooth Object Normal/Ignore Object Normal

a. **Smooth Object Normal** *(D: 0)* – The Intensity of the smoothness/ignore object normal.
b. **Vertex Color Red Control Smooth Object Normal** *(D: Unchecked)*
c. **XYZ Position** *(D:0)* – Adjust normal XYZ.
d. **XYZ Hardness – Adjust normal XYZ edge hardness.**

High value means hard edge and less **Self Shadow & ShadowT Threshold control, if low means soft edge and more **Self Shadow & ShadowT Threshold** control.*

e. **Show Normal** *(D: Unchecked)* **–** Show XYZ normal.

**Use for visualizing normal and see the adjustment.*

P. Shadow Color Texture – Shadow color in texture form.

a. **Shadow Color Texture (***D: No texture)* – Shadow color in texture or shadow/darker version of the main texture.

Note: You'll need to change **Overall Shadow Color to White to be able to see it.*

b. **Power** *(D: 0)* **–** Color strength/contrast of the texture.

**If Increase, texture color will become stronger or darker.*

Q. ShadowT – Texture based shadow. **(Uses Texture/2D Texture)**

a. **Intensity** *(D: 1) (N-A on Lite Ver.)* – Adjust ShadowT Intensity.
b. **Texture** *(D: No Texture)* **–** Flat or Gradient Dark Gray & White Texture to be use as shadow and shade.

***(Recommend):** Use Dark Gray & White texture map.*
*Use Black & White texture if you don't want ShadowT to be affected by **Light Threshold**, **Shadow Threshold** & **Light Falloff**.*

c. **Light Threshold** *(D: 50)* – The amount of light.

High values lighter, Low values less light.

d. **Shadow Threshold** *(D: 0)* – The amount of shadow.
**Low values less shadow, high values more shadow.*

e. **Hardness** *(D:0)* – ShadowT edge hardness.
f. **Color** *(D: Black)* – ShadowT Color.
g. **Color Power** *(D:1)* - Adjust color power/intensity.
h. **Ignore Light** *(D: Unchecked)* – Not follow light or ignore light direction.
i. **Show In Shadow** *(D: Unchecked) (N-A on Lite Ver.)* – Show ShadowT in shadow.

Note: You'll need to change **Overall Shadow Color or **Self Shadow Color** to any color, to be able to see it.*

j. **Show In Ambient Light** *(D: Unchecked) (N-A in Lite Ver.)* – Show ShadowT in Ambient Light.
k. **Show In Ambient Light & Shadow Intensity** *(D:1) (N-A on Lite Ver.)*
l. **Show In Ambient Light & Shadow Threshold** *(D: 0.4) (N-A on Lite Ver.)*
m. **Light Falloff Affect ShadowT** *(D: Unchecked)* – Light falloff affect ShadowT.

R. **PTexture** *(D: No Texture)* – Texture to use as pattern style shadow.

a. **Shadow PTexture** *(D: No Texture)* **–** Texture to be use as patterned shadow.
b. **Power** *(D: 1)* - Strength/contrast of the texture.

***Note:** PTextures/Pattern Texture - use for turning shadow to pattern style shadow like manga "Half Tone", you can also use any texture with/without alpha/transparent.*
*- You'll need to change **Overall Shadow Color** or **Self Shadow Color** to White or any color, to be able to see it.*

S. **Lighting -** GI Lighting, Light-Falloff & Other lightings.

a. **Receive Environmental Lighting and GI** *(D: Checked) – Turn off or on environmental lighting, GI or ambient light.*
b. **Environmental Lighting Intensity** *(D: 1)* – Adjust Environmental Lighting intensity on the object.
c. **GI Flat Shade** *(D: Unchecked)* – Use hard edge or flat shade GI.
d. **GI Shade Threshold** *(D: 0)* – The amount of GI or SH shade.

Similar to **Self Shadow Threshold.*

e. **Light Affect Shadow** *(D: Unchecked)* **-** Lights affect Shadow.

** Use this if you want the shadow to be affected by lights.*

f. **Light Intensity** *(D: -1)*

You can adjust this if **Light Affect Shadow is enable or checked.*
This option is connect to **Light Affect Shadow option.*

g. **Point and Spot light Intensity** *(D: 0)* – Adjust Point and Spot light Intensity on the object.

**Adjust this if the object is not bright enough or need more brightness when using point & spot light.*

h. **Light Falloff Softness** *(D: 1)* – Adjust Point & Spot Light light falloff edge softness.

**Change the value to 0 if you want that anime/cartoon style light falloff.*

T. Custom Light Direction

a. **Intensity** *(D: 0)*
b. **Custom Light Direction** *(D: XY:0 Z:10)*
c. **Follow Object Rotation** *(D: Checked)* - **Custom Light Direction** follow object rotation.

****Note:** This only affects **Self Shadow** & **ShadowT.***
Use this if you don't want **Self Shadow & **ShadowT** to follow Light too much or you want **Self Shadow** & **ShadowT** to follow other object by script.*
**Useful on anime face.*

U. Reflection

a. **Intensity** *(D: 0)* **–** Reflection intensity/strength.

b. **Roughness** *(D: 0)*

This will also affect **FReflection.*

c. **Metallic** *(D:0)*

Change **Main Color if it's bright.*
******Metallic is dark color.*

d. **Mask Reflection** *(D: No Texture)* **–** Mask Reflection.

**Use Black & White texture or texture with alpha/transparent.*
**White means affected, Black mean affected.*

V. **FReflection** – Fake Reflection **(Not Real-time, Not Cube map, Not MatCap, It Uses Texture/2D Texture).**

a. **FReflection/FReflection Texture** *(D: No Texture)* **–** Texture or any images to be used as reflection.
**Use square/equal sides size texture or panorama image/picture.*
Be sure to use the Tilling & Offset to adjust its position and size.

W. **Rim Light**

a. **Unfill** *(D: 1.5)* **–** Reduce Rim light on the object.
b. **Softness** *(D: Unchecked)* **–** Adjust Rim Light edge softness.
c. **Light Affect Rim Light** *(D: Checked)* – Light Intensity, color and light falloff affects Rim Light.
d. **Color** *(D: White)* **–** Rim light color.
e. **Color Power***(D: 10)* **-** Adjust color power or intensity.
f. **Rim Light In Light** *(D: Checked)* **-** Rim light visible only in light.

X. **Depth** *(Refraction Shader Only)* **–** Depth Effect.

a. **Depth** *(D: 0.2)* **–** Depth intensity/strength.
b. **Edge Hardness** *(D: 0.1)* **–** Depth edge hardness.
c. **Color** *(D: White)* – Depth color.
d. **Color Power** *(D: 1.8)* – Depth color power or intensity.

Y. **Tessellation** *(RealToon Tessellation Version Shader only)*

a. **Smoothness** *(D: 0.5)*
b. **Transition** *(D: 0.8)* **–** The amount of transition between **Near** & **Far**.
c. **Near** *(D: 1)* **–** The amount of tessellation in near view.
d. **Far** *(D: 1)* **–** The amount of tessellation in far view.

Z. See Through

a. ID *(D: 0) – ID or Reference value.*
b. Set 1 & Set 2 *(D: None)*

[Note]
*****"A"*** *the see through object.*
*****"B"*** *the object to be seen through* ***"A"****.*

If* ***Set 1* *is set to* ***A****,* ***Set 2*** *is also set to* ***A****.* ***(See through object)***
If* ***Set 1* *is set to* ***B, Set 2*** *is also set to* ***B****.* ***(Object to be seen through "A")***
If the* ***ID* *of the see through object* ***"A"*** *is set to 1****,*** *the* ***ID*** *of the object to be seen through* ***"A"*** *is also set to* ***1****.*

[Important)
[See through object "A"] Render Queue *set to Geometry (2000).*
["B" object to be seen through "A"] Render Queue *set to Geometry (2000) and minus 1.*
[VRChat users that don't use this, Set both A and B to "Blank"]
(See/open scene "See Through Example" for more info)

AA. Disable/Enable Feature – Here you can enable or disable features you want or don't want to use.

BB. Other Options/Features

a. No Light and Shadow On Backface *(D: Checked) (N-A on Lite Ver.)*
b. Hide Directional Light Shadow *(D: Unchecked) (Default & Default Tessellation Only)*
c. Hide Point & Spotlight Shadow *(D: Unchecked)*
d. Hide Cast Shadow *(D: Unchecked) (Default & Tessellation Fade Transparency Only)*
e. **ZWrite** *(Fade Transparency & Refraction Only) (D: Off)*

f. Automatic Remove Unused Shader Keywords *(D: Unchecked)* – Remove any unused stored shader keywords.

***This can also fix some keywords error problem.*
***Warning:** This will also remove previous shaders stored shader keywords,*
Only enable this if you don't planned to reuse or change back to previous shaders you used.

[Frame By Frame Rendering Tool]

"Frame by Frame Rendering is a simple tool to render each frame to PNG File. (Use For Animation & Illustration/Art)"

Two types of Frame By Frame Rendering script:

1. **Frame by Frame Rendering (Default) –** Auto Render by Start Frame.
2. **Frame By Frame Rendering (Manual) –** Manual Render.

(Controls & Function)

Frame By Frame Rendering (Default)

A. **Settings**

a. **Path Folder** *(D: Rendered Files)* **–** A path/location to where to save the PNG Files.

**You can put name folder only but it will be created into your Unity3D root project folder.*
*If you want to save the files to different location/drive, include "DriveLetter:\", example "C:\PNGFiles"
* *This will set to **"Rendered Files"** if this set to empty.*

b. PNG File Name *(D: Frame)*

* *This will set to **"Frame"** if this set to empty.*

c. Frame Rate *(D:24)*
d. **Start Frame** *(D:0):* Frame Number to start render.
e. **End Frame** *(D:0):* Frame Number to end render.
f. **Single Frame Rendering Mode** *(D: Unchecked)* – Render single image only.

This will ignore **Frame Rate, **Start Frame** & **End Frame**.*
It will only render **Frame 1.*
**If Checked/Enabled file name will be named "YouFileName Hour_Min_Sec".*
**If Uncheck/Disable file name will be named "YouFileName FrameNumber".*

B. Information – This section will only display information about the rendering and operations.

a. **Current Frame –** Display the current frame.
b. **Info –** Display rendering info and operations.

Frame By Frame Rendering (Manual)

a. **Frame Number** *(D: 0)* – Frame number to be render.
b. **Render** *(D: 0)* – To render or Start Render.

A .Settings

c. **Path Folder** *(D: Rendered Files)* **–** A path/location to where to save the PNG Files.

**You can put name folder only but it will be created into your Unity3D root project folder.*
*If you want to save the files to different location/drive, include "DriveLetter:\", example "C:\PNGFiles"
* *This will set to **"Rendered Files"** if this set to empty.*

d. PNG File Name *(D: Frame)*

* *This will set to **"Frame"** if this set to empty.*

e. **Picture Mode** *(D: Unchecked)* – Render single image only.

**If Checked/Enabled file name will be named "YouFileName Hour_Min_Sec".*
**If Uncheck/Disable file name will be name "YouFileName FrameNumber".*

B. Information – This section will only display information about the rendering and operations.

a. **Last Rendered Frame –** Display the last rendered frame.
b. **Info –** Display rendering info and operations.

(Frame By Frame Rendering Notes/Tips)

For Frame By Frame Rendering Both (Default & Manual)

1. You can pause rendering by click pause button.

2. Stop render immediately by click play button again.

3. You cannot start render if the folder has files on it so you need to change the **Path Folder** to another location or folder. (Applies only to **Non Picture Mode** & **Single Frame Mode**)

4. You can start render even if the folder has files on it. (Applies only to **Picture Mode** & **Single Frame Mode**)

5. You can create folder by just putting a folder name that is not yet exist in the current location/path. (Applies to **Path Folder**)

6. To set the resolution just set it in the Game view or Game panel.

For Frame By Frame Rendering (Manual)

1. Click **Render** to start render, once clicked it will turn back to unchecked means render 1 frame not continuous unlike **Frame By Frame Rendering (Default)**.

2. You can overwrite a specific saved frame by setting the **Frame Number** to the frame number you want to overwrite then click **Render**. Be sure that frame number is in the folder. Be careful not to double the **Render** or else it will overwrite the next frame number that is already saved.

For Frame By Frame Rendering (Default)

1. Click play button to start render, once the button is clicked **Current Frame** will start moving or display the current frame once the **Current Frame** reached the **Start Frame** number it will start rendering then later if **Current Frame** reached the **Start Frame** number it will stop render. To completely end rendering click play button.

2. If you render a scene with timeline, set **Frame Rate** to the frame rate of timeline. *Example "Timeline frame rate is 60 = Frame By Frame Rendering (Default) Frame rate is also 60"*. If the two is not equal the output is not synchronized especially if you edit it in your Video Editor Software or Compositor Software.

(For Importing PNG files to your Video Editor or Compositing Software)

1. Import PNG files as **PNG Sequence** or **Image Sequence**, be sure your video editor or compositing software has this features or option. Be sure PNG files are numbered frames like *"Frame 0002 to Frame 9000 or higher".*

2. Change the imported **PNG Sequence** or **Image Sequence** file frame rate to the frame rate you set in your **Frame by Frame Rendering** Settings.

[Notes & Tips]

A. You can control the properties of the shaders in your code.
To see/access the shader properties, just go to **RealToon Shaders** folder and select the shader you want to access.

If you want to learn how to access shader properties by code, just go to unity3d manual script.

B. There's a temporary user guide for HDRP version and this HDRP version temporary user guide will be merge to this main user guide soon.

C. Disable **Outline** if your object/s don't need outline or if you don't want to use outline and want less draw calls or want to use a 3rd party image effects/Post Processing outline.

D. Adjust **Reduce Shadow** to reduce unwanted object self cast shadow especially shadow artifacts.

E. To properly color shadow, Adjust **Lighting -> Environmental Intensity** to 0 then change your object shadow color, after that, change **Environmental Intensity** back to 1 or your own value.

F. Note that tessellation only work on **DX11/12** to up**, OpenGL Core, OpenGL ES 3.1 mobile** & **PS4/XBoxOne** and **Shader Model 4.6** to up.

G. You can use RealToon together with Unity3D Standard Shader or your other shaders.

H. RealToon can receive GI, skylight/environment light & can do baked/real-time reflection.

I. You can use **ShadowT** as 2nd self shadow/shade.

J. You can use both **Directional Light** & **Point – Spot light** at the same time.

K. If you want a manga/comics look, use **PTexture** and use a half tone texture.
*Adjust **Saturation** to 0 if you want that Black and white look and you don't want to edit the texture again.
*To use **Saturation**, just enable **Color Adjustment**.

L. Always Change the **Overall Shadow Color** to white if you want to color other shadow features like **ShadowT** & **Self Shadow** and use **PTexture**.

M. Enable **Light Affect Shadow** if you want your shadow to be affected by lights.

N. **Fade Transparency & Refraction** doesn't receive shadows.

O. **Refraction** doesn't have outline for some reason.

P. Make your normal map smooth for better shading details.

Q. Use **ShadowT** for more detailed or additional shadows like the shadows on a cloth or hair.

R. For better anime/toon shadow/shading, edit the Vertex Normal of your model by editing it to your 3d modeling software or you use **Smooth Object Normal** feature or override object normal by using **Normal Map**.

S. **Smooth Object Normal** might not work in some objects/characters.

T. Use **Custom Light Direction** if you don't want **Self Shadow** & **ShadowT** to not follow Light Direction and follow other object by script. Useful for anime style faces.

U. If you want your transparent object to have outline, just enable **Outline** and then adjust **Reduce Outline Backface**.

V. Adjust **Outline Offset** if you want to adjust the outline position.
* For silhouette outline effect, just adjust **Outline Z Position In Camera** option.

W. Contact me if you want to translate this User Guide in your local language, see page 24 for contact details.

X. Image Gallery:
http://mjq3690.deviantart.com/gallery/61884975/RealToon-Shader-Gallery

Y. Video Tutorials:
https://www.youtube.com/playlist?list=PL0M1m9smMVPJ4qEkJnZObqJE5mU9uz6SY

Z. Video Demo:
https://www.youtube.com/playlist?list=PL0M1m9smMVPI1XRV_1UL_Vz3IAHkPtQYT

AA. Other Videos
https://www.youtube.com/playlist?list=PL0M1m9smMVPK_vLCBnJ8qIc3w5WsHrCM5

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https://www.facebook.com/mjqstudioworks/

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Youtube:
https://www.youtube.com/channel/UC5sHbeOQdyMPV_Ck0kRgJgQ

MJQ Studio Works Unity Publisher Profile (Support Links & Email):
http://u3d.as/vDv

Unity 3D Forum:
https://forum.unity3d.com/threads/realtoon-pc-mobile.414237/

Website:
https://mjqstudioworks.weebly.com/