Genshin Impact Shader Manual

v1.5 | Made with Blender 2.92 | by Ben Ayers | bjayers.com

Thank you very much for purchasing my Genshin Impact Blender shader! This guide will help you get started by explaining the contents of the sample file, how to use a node group, how to append the nodegroup to other .blend files, how each of the shader's settings works, and finally offering some tips and recommendations to get the best results possible out of the shader.

If you need any additional help, if there are any problems, or if you wish to report a bug, please feel free to contact me on ArtStation or by emailing me at ben.ayers@archstud.io.

If you like the shader, please consider leaving a review or rating—it is tremendously helpful!

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Getting Started

In the Download

- Genshin Shader .blend
  - A "Genshin Shader" node group
  - 8 sample materials
  - A sample "Outline" material
  - Genshin character screen background
    - Background and reflective ground objects
    - "Genshin World" world material
    - Genshin world color node tree for adjusting the color of the background
- Example .blend - Noelle
  - Applies the Genshin Shader to miHoYo's official Noelle MMD model solely for educational and demonstrative purposes.

- ○
- ● Instructions for the shader (this document)
  - ○ Instructions for getting started
  - ○ Shader parameter documentation
  - ○ Recommended settings
  - ○ Tips and tricks for a better render

Using a Node Group

In the Shader Editor in Blender, Add -> Group -> Genshin Shader, then connect inputs and outputs as necessary.

Appending a Node Group

Genshin Impact Shader for Blender is a node group and a set of materials, NOT an add-on or similar software. To use an included node group, sample material, or mesh in your own project, please follow the below instructions:

1. Open Blender and create a new file.
2. Navigate to "File -> Append" in the main menu.
3. In the resulting file explorer, navigate to and double-click your downloaded *Genshin Impact Shader* .blend file.
4. Click on "NodeTree," select "Genshin Shader," then click "Append." Or click on "Materials," select one of the sample materials, then click "Append."
5. Finally, add the node group to any material as outlined above to get started.

This can also be done for the "BKG" and "Ground" objects to use the Genshin character screen background as well as the "Genshin World" world material.


Parts of the Genshin Impact Shader

Below is an edited screenshot from the game to demonstrate the parts of the shader this Blender node attempts to mimic.

Outline Clamp — Clamped in Solidify modifier for sharp point

Specular — Masked by hair highlights

Tinted Shadow — Light red-brown tint

Subsurface Scattering

Outer SSS — Between light and shadow

Inner SSS — Faint gradient in shadow

Thin Rim Light

Tinted Matcap — Similar tint as the hair

Metallic Matcap — On top of Shadow

Specular — With roughness
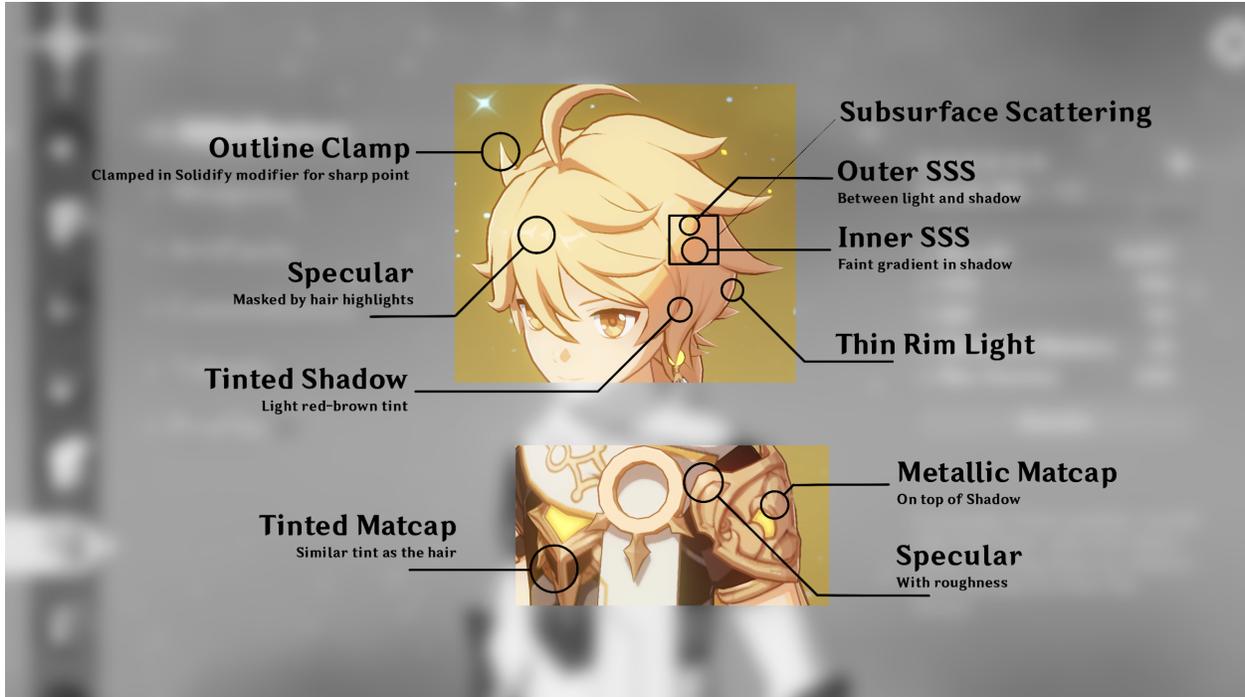
Using the Shader (Shader Settings)

Genshin Shader is a very customizable, non-photorealistic shader that seeks to allow art direction of every detail. It uses a basic diffuse shader to create artificial subsurface scattering, metallic, rim light, and specular—all adjustable with a number of parameters:

▼ Genshin Shader v1.5

| | Shader |

| ◑ ⌄ | Genshin Shader v1.5 | 9 | 🛡 |

● Base Color	
● Shadow Color	
● Shadow Position	1.000
● Alpha	1.000
● Normal	
●	
● ——Subsurface——	
● Outer Size (Soft)	1.000
● Outer Size (Hard)	1.000
● Outer: Color	
● Outer: Hardness	0.408
● Inner: Size	1.000
● Inner: Color	
● Inner: Value Threshold	3.000
●	
● ——Rim Light——	
● Color	
● Intensity	1.000
● Size	0.995
●	
● ——Metallic——	
● Metallic	0.000
● Roughness	0.000
● Reflection Scale X	0.000
● Reflection Scale Y	0.860
● Reflection Tint	
● Tint Intensity	0.500
●	
● ——Specular——	
● Specularity	0.000
● Tint	
● Roughness	0.000
● Specular Size	0.500
● Shadow Mask	0.500

- Base
  - **Base Color**
    - The base color of the material. Accepts textures.
  - **Shadow Color**
    - The tint of all shadows. Accepts textures.
  - **Shadow Size**
    - Adjusts the light-to-shadow ratio of the model. Smaller ratio = smaller SSS spread, larger ratio = larger SSS spread.
    - Min. 0 (No shadows), Default: 1, Max: 10
    -
  - **Alpha**
    - Sets the opacity of the material. Accepts textures.
    - Default: 1
    - Recommended settings:
      - Material -> Blend Mode: "Alpha Hashed" recommended
      - Material -> Backface Culling: Enabled (if not a flat mesh)
    - Note: Using a Solidify modifier as an outline is NOT recommended when using alpha, as it will be visible through the transparency effect.
  - **Normal**
    - Applies a normal map to diffuse shading, metallic reflection, and specular.
- Subsurface (SSS)
  - **Outer Size (Soft)**
    - This setting adjusts the size of the softer, artificial SSS in the lit part of an object.
    - Min: 0.5 (Smaller), Default: 1, Max: 1.5 (Larger)
    -
  - **Outer Size (Hard)**
    - This setting adjusts the size of the harder, artificial SSS in the lit part of an object.
    - Min: 0.5 (Smaller), Default: 1, Max: 1.5 (Larger)
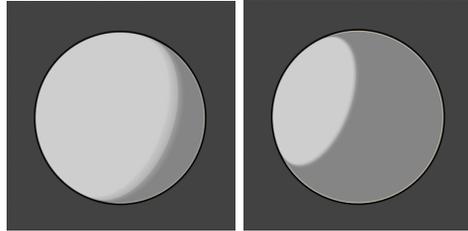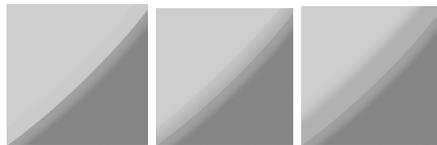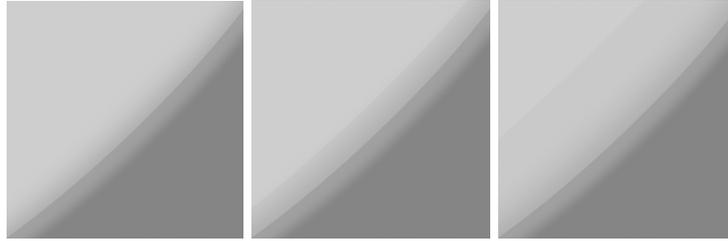
- ■
- ○ **Outer: Color**
    - ■ The color of the artificial SSS in the lit part of an object.
    - ■
- ○ **Outer: Hardness**
    - ■ The opacity of the "Outer Size (Hard)" parameter.
    - ■ Min: 0 (not visible), Default: 0.408, Max: 1 (fully visible)
    - ■
- ○ **Inner: Size**
    - ■ This setting adjusts the size of the artificial SSS glow in the shaded part of an object. Does not have an effect if the value of "Inner: Value Threshold" is too low.
    - ■ Min: 0.75 (Smaller), Default: 1, Max: 1.5 (Larger)
    - ■
- ○ **Inner: Color**
   - ■ The color of the artificial SSS in the shaded part of an object.
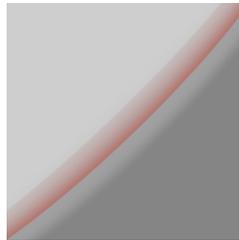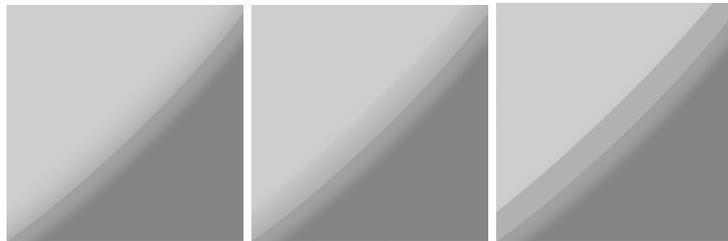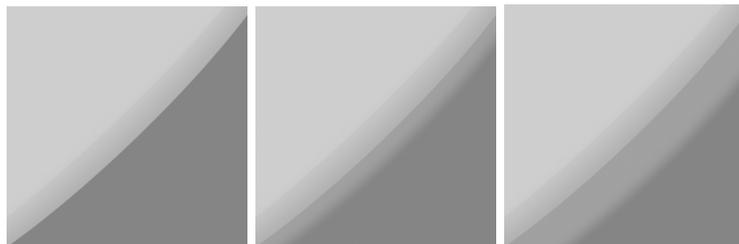
- ○ **Inner: Value Threshold**
  - ■ The threshold of the darkest value on which the inner SSS will appear. This allows for disabling the effect on darker parts of texture maps to prevent strange lighting artifacts.
  - ■ Min: 0 (All), Max: 3 (Off), Default: 3 (Off)
- ● Rim Light
  - ○ **Color**
    - ■ The color of the artificial rim light on the edges of a material. The rim light only appears on unlit parts of an object.
  - ○ **Intensity**
    - ■ The opacity of the artificial rim light on the edges of a material.

  - ○ **Size**
    - ■ The thickness of the artificial rim light on the edges of a material.
    - ■ Default: 0.995

- ● Metallic
  - ○ **Metallic**
    - ■ The opacity of the artificial matcap on a material to emulate a stylized metallic appearance. Supports texture maps.

  - ○ **Roughness**

-
  -
    -
      - The softness of the metallic matcap. Blends 3 levels of roughness matcaps: 0 is level 1 (left); 0.5 is level 2 (middle), and 1 is level 3 (right), with any value between blending the two levels. Supports texture maps.
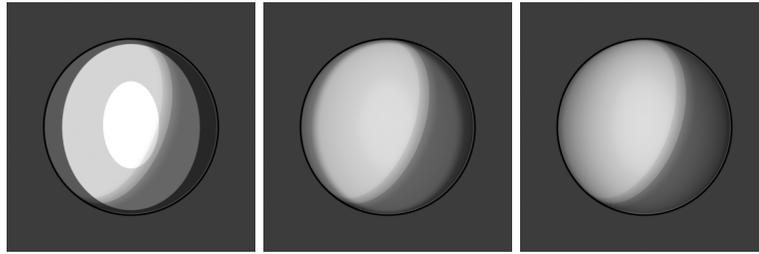

    - **Reflection Scale X & Y**
      - The height (Y) and width (X) of the metallic matcap.
      - Min: 0, Default: 0.5 (X) 0.86 (Y), Max: 1
   - These default settings were chosen because they appear to be the closest values to the game's official shader.
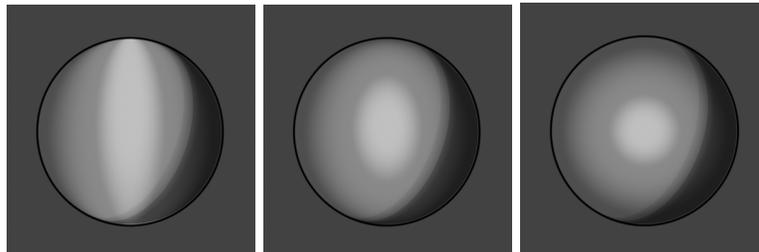
    - **Reflection Tint**
      - The color tint of the darkening effect around the edges of the metallic matcap.
   - Default: H: 0, S: 0, V: 0.2
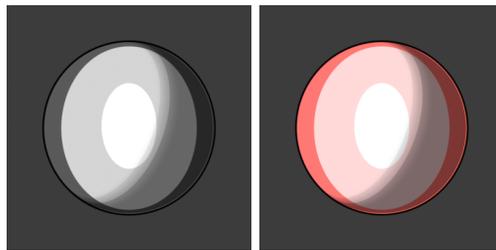
    - **Tint Intensity**
      - The intensity of the metallic reflection tint.
   - Min: 0, Default: 0.5, Max: 1
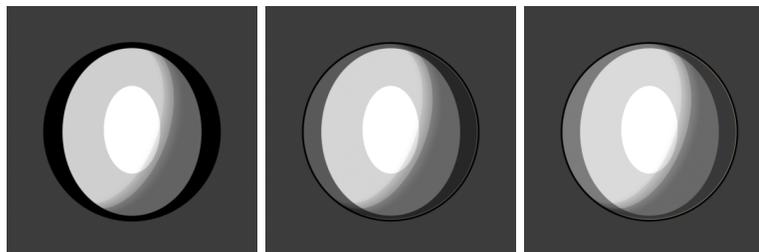
- Specular
  - **Specularity**

- - Opacity of the specular weight. Supports texture maps.
  - *In Blender 2.93 or later, "Screen Space Refraction" MUST be enabled in Material Properties -> Settings -> Screen Space Refraction for Specularity to function.*
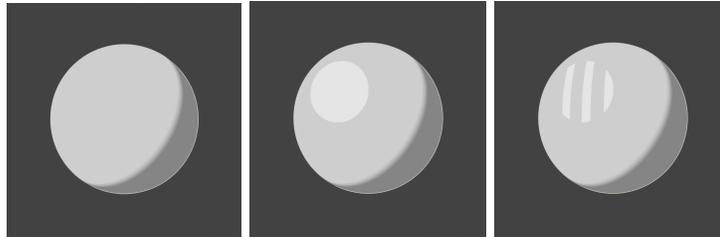

- - ■
- ○ **Tint**
  - Tint of the artificial specular weight dictated by hue and saturation.
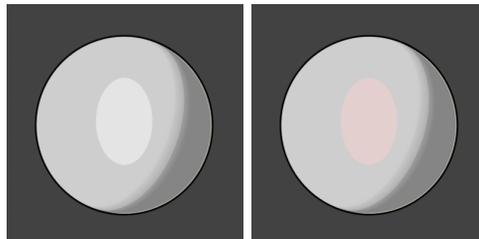

- - ■
- ○ **Roughness**
 - The softness of the specular matcap. Supports texture maps.
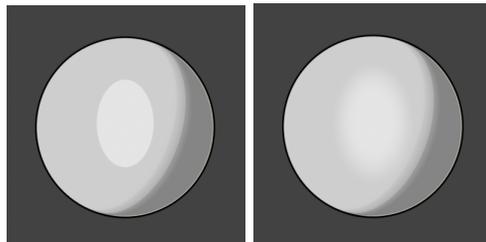
- - ■
- ○ **Specular Size**
  - The size of the artificial metallic reflection based on the fresnel layer weight.
  - Min: 0.05, Default: 0.5, Max: 0.99
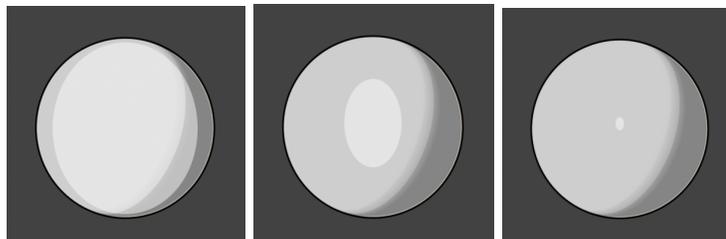
- - ■
- ○ **Shadow Mask**
  - The opacity of the specular matcap within shaded areas of an object.
  - Min: 0, Default: 0.5, Max: 1
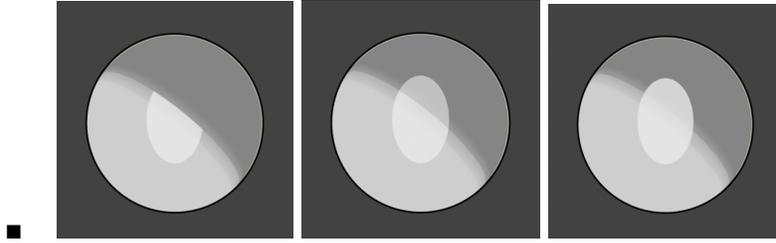

Recommended Settings for Best Results

Recommended EEVEE Settings

- Shadows:
    - Cube Size: Highest you can render
    - Cascade Size: Highest you can render
    - **Enable** "Soft Shadows"
- Color Management:
    - View Transform: **Standard** (*This one is important, as your model will look desaturated and washed out on "filmic." This setting is almost always preferred for non-photorealistic renders.*)

Recommended Lighting Settings

Genshin Shader works best with direct lighting from a **single** sun object with **NO** HDRI applied to the world. Multiple lights or an HDRI will cause strange lighting and shading artifacts.

The brighter the sun is, the less spread-out the subsurface lines are. I find a strength of 3-5 works best in most cases. For example, a sun strength of 5 (left) vs a sun strength of 20 (right):
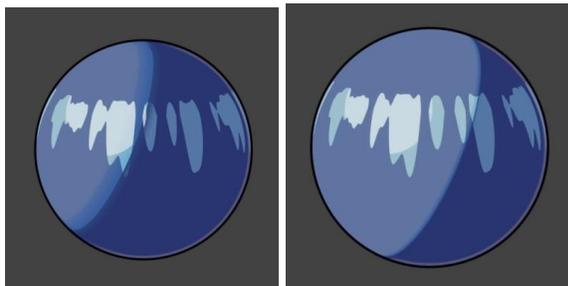
It is important to note that this option of adjusting shadow size and SSS spread functions opposite of the "Shadow Size" parameter, which spreads out the SSS lines more the larger the lit area is. These two options can be used together to adjust the shadow size and SSS size to your liking.

I find the rotation of the sun light usually works well as: X 60°, Y -20°, Z 320°.

Tips for a Better Render

To get a render as close to the Genshin Impact shader as possible, here are a few tips and tricks you may want to follow.

1. **Outlines:** Use the "Solidify" modifier to create an outline. Tick "Flip Normals" and adjust the thickness, offset, and clamp to your liking, then change the Material Index Offset to "1" and place an outline material after each material slot on the object. This outline material should use an emission shader with Backface Culling enabled and shadows set to "None." A basic "Outline" material is included in the .blend.
   a. (For Blender 2.91 and above) If used on an official MMD model, the solidify modifier tends to run into problems because parts of those models are often disconnected. This can often be fixed by merging vertices by distance:
      i. Select all vertices on the model in Edit Mode.
      ii. Press "M"
      iii. Select "By Distance"
      iv. In the bottom left corner of your viewport, tick "Sharp Edges" (or parts of the model will be incorrectly shaded). This option is only available in Blender 2.92 or later.
   b. I recommend not outlining the eyes and eyelashes, as it typically results in clipping. Just exchange the emission shader node with a Transparent shader for that outline material and swap them out.
2. **Masks:** Try using color ramps with the default textures to create quick and dirty masks for parameters like Metallic or Specular. I often use this technique for masking out metallic parts of a character or masking the metallic reflection size on certain patterns (like the scales on Zhongli's coattails).
3. **Using MMD Models:** If you are rendering a Genshin MMD model, try using the "specular" and the specular map parameters to emulate hair highlights like in the game. I like to open the official hair textures in Photoshop and create a black and white map for the hair highlights. For example, here is Zhongli's official hair texture (property of miHoYo) and a simple specular map I made from it. This can also be done in Texture Paint mode in Blender.

   a.
4. **Eyes:** Eyes work best with a plain Emission shader instead of this one.

5. **Shadows:** Shadows in-game are not particularly visible. I typically aim for lighter shadows for most materials.
6. **Custom Normals:** Characters in-game have some shadow and light masking magic being done with their faces. You'll notice this when rotating the camera around them in the character select screen as the shadow "snaps" to visually appealing angles on the face, and it is made this way to prevent strange shadows from appearing. My shader cannot perfectly replicate this, so there are two options:
    a. Set the "Shadow Position" parameter for the face to a very low number (while not perfect, I find 0.25 to 0.3 usually works well). This will work for most faces for getting approximate shadows, but it won't be perfect.
    b. Normal editing with the Data Transfer modifier. This is a bit of a more advanced feature, but it can help get your shadows exactly right.
7. **Transparency:**
    a. Blend Mode: "Alpha Hashed" has more noise and looks less pretty in the viewport or at low render samples, but it is more accurate. "Alpha Blend" is quicker and prettier in the viewport, but it will many times render with bugs (try changing one of the monkey head materials to "Alpha Blend" in the sample file for an example). Because of this, I recommend using "Alpha Hashed" in most instances.
    b. Outlines: In-game, there are very few objects on characters that use transparency, but those that do typically have no outline (see Scaramouche's veil below for an example). This is because the outline method mentioned above (also called the "inverted hull" method) does not work well with it because it can be seen through the transparency. Try adjusting the alpha of one of the monkey heads in the sample file (which have outlines applied) for an example of this.

i.

Changelog

V1.5.1 - 2021/6/2
- Support for Blender 2.93
- Specularity
    - Manual updated to reflect that Specularity will not currently function in Blender 2.93 unless Screen Space Refraction is enabled under material settings
        - This is due to 2.93's changes to screen space reflections in EEVEE

v1.5 - 2021/5/27
- Reworked Metallic
    - Changed base from layer weight to matcap
    - Adjusted matcap color ramp values
    - Removed Anisotropy
    - Removed Reflection Size
    - Added Reflection Scale X
    - Added Reflection Scale Y
    - Removed Offset X
    - Removed Offset Y
    - Bug fixes
- Reworked Specular
    - Changed base from layer weight to specular shader
        - On further studies, this matches the game's shader much more closely and is rendered more accurately
    - Removed Anisotropy
    - Renamed Reflection Size to "Specular Size"
    - Removed Offset X
    - Removed Offset Y
    - Bug fixes
- Normals (beta)
    - Added beta support for normal and bump maps
        - Supported by diffuse, metallic, and specular

Editor's Note: *Metallic and specular have undergone more changes again because I have gone back and forth on how best to simulate the shader in-game without using an external matcap texture. I apologize for any inconveniences. With the new method, I believe the shader is closer than ever to the official one, and I'll continue trying to match it to the best of my and Blender's abilities.*

v1.4 - 2021/5/20
- Transparency
    - Added Alpha
    - Updated documentation with related tips
- Shader

- ○ Changed shader output from "Emission" to "Shader" to account for transparency.
- ● .blend
  - ○ Added 2 new sample materials

v1.3.1 - 2021/5/12
- ● Documentation and disclaimer updates

v1.3 - 2021/5/11
- ● Metallic
  - ○ Added Reflection Tint
  - ○ Added Tint Intensity
  - ○ Added Metallic Offsets (X and Y)
  - ○ Added a third level of roughness
    - ■ Now blends between level 1 (shiny, 0), level 2 (mid, 0.5), and level 3 (matte, 1)
  - ○ Changed rough gradient method from Ease to B-Spline
  - ○ Adjusted default metallic matcap tint colors
- ● Specular
  - ○ Added a third level of roughness
    - ■ Now blends between level 1 (shiny, 0), level 2 (mid, 0.5), and level 3 (matte, 1)
- ● Structure
  - ○ Improved readability of node
- ● Files
  - ○ Added 2 new sample materials to showcase additions and changes
    - ■ Bronze to showcase Metallic Reflection Tint
    - ■ Gold Armor (mimicking Noelle's armor) to showcase roughness level 2 (0.5)
  - ○ Added an example file of miHoYo's official Noelle MMD model to showcase and provide examples of the Genshin Shader for EEVEE
- ● Documentation
  - ○ Added more tips and tricks to get a better render.

v1.2 - 2021/5/10
- ● Metallic and Specular Overhaul
  - ○ No longer uses a matcap texture
  - ○ Settings for metallic/specular are now separate
  - ○ Metallic now supports texture maps
  - ○ Specularity now supports texture maps
  - ○ Added Roughess
  - ○ Added Anisotropy
  - ○ Added Reflection Size
  - ○ Reworked Specularity
    - ■ Specular visibility is now a single parameter

■ Changed "Color" to "Tint" and controls hue and saturation
            ○ Added Specular Shadow Mask
            ○ Added Specular Offsets (X and Y)
            ○ Removed Metallic Map
            ○ Removed Specular Map
        ● Shadows
            ○ Added Shadow Position
        ● Subsurface Scattering (SSS)
            ○ Adjusted the softness of the inner SSS gradient
        ● .blend
            ○ Added 1 new sample material to showcase metallic and specular changes

v1.1 - Initial Release
    ● Bug fixes and refinements

v1.0 - Beta Release

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Disclaimers

The video game Genshin Impact and it's characters, models, textures, story, lore, and any other related assets are property of miHoYo and are not included in this product or its license.

The example .blend file featuring miHoYo's official Noelle MMD model serves only as an example exclusively for educational purposes to demonstrate the capabilities of this shader product, and may not be reused or resold privately or commercially. The model is not included in the price of this product and is freely available for download on Bilibili here.

While this shader's goal is to mimic Genshin Impact's shader as closely as possible, it is, unfortunately, not perfect and will not perfectly replicate Genshin Impact's character shader, though it can and will get close if used correctly.