

# CVD Filter

by Gary Pettie (Slightly Odd Games)

Thank you for importing the CVD (Color Vision Deficiency) Filter into your project. These post processing profiles are designed to help you to improve the readability of your in-game visuals for people with CVD.

## General Information

### What is Color Vision Deficiency?

Color Vision Deficiency is more commonly referred to as color blindness.

The retina contains two general types of photoreceptor cells – rods and cones. Rods detect only light and dark and are highly sensitive to low light levels. Cones detect color and are broken down into three types - Red, Green, and Blue.

When one or more of these types of cone cells are missing or defective the person experiences a form of CVD. If none of the cones function correctly then the person is truly “color blind”.

Generally, CVD is grouped into three categories; red-green, blue-yellow, and achromatic.

### Why should you care?

The most common form of CVD is, red-green, affecting around 8% of men and 0.5% women. That’s a whole lot of players!

It’s important to consider these players when creating your games, especially if color is used to identify key gameplay elements.

These post-processing filters help you see your game through the eyes of a player with various forms of CVD, allowing you to make better design decisions and extend the reach of your game.

If you’re game includes key gameplay elements that rely on color, such as color-matching, think about adding distinct symbols or patterns to the object to help differentiate them from one another.

### Want to learn more?

Check out the following links for some interesting facts and statistics about CVD and color blindness.

<https://www.youtube.com/watch?v=xrqdU4cZaLw>

[https://nei.nih.gov/health/color blindness/facts about](https://nei.nih.gov/health/color_blindness/facts_about)

<http://www.color-blindness.com/2006/04/28/colorblind-population/>

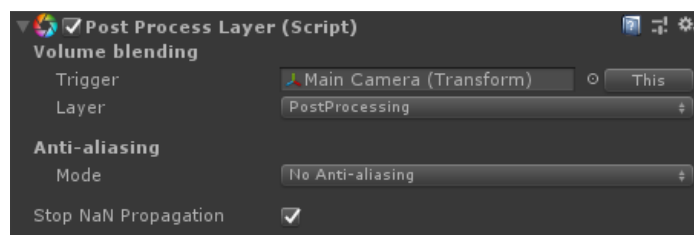
<https://iristech.co/statistics/>

## How do I use these filters?

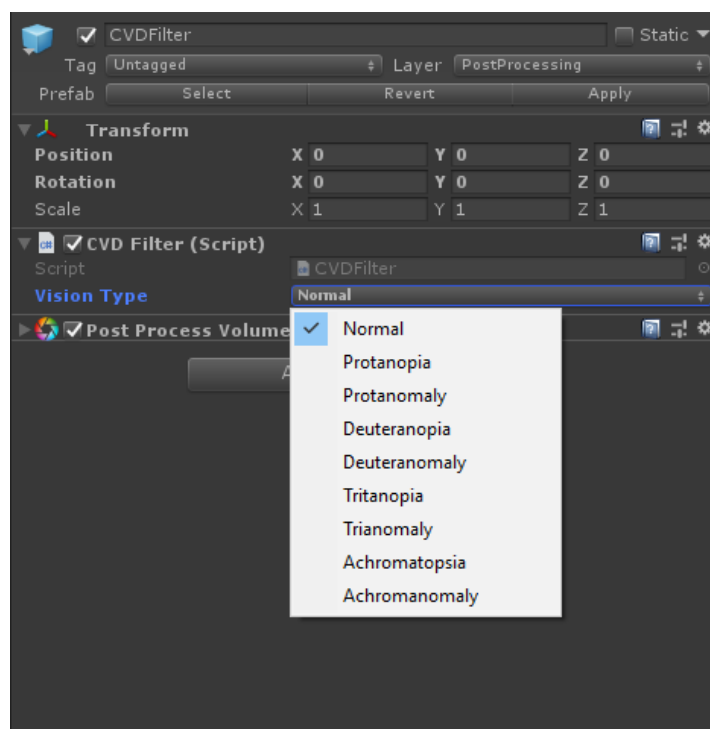
These filters are designed to utilize the Unity Post Processing Framework v2 in Unity 2018.

Steps:

1. Install Post Processing Framework 2.0 or later. This can be found in the Package Manager.
2. Add a new layer called “*CVDFilter*” to your project
3. Add a **Post Processing Layer** to your camera and set the *Volume Blending* layer to “*CVDFilter*”



4. Drag the **CVDFilter Prefab** into your scene
5. Change the *Vision Type* to apply the various filters in real time.

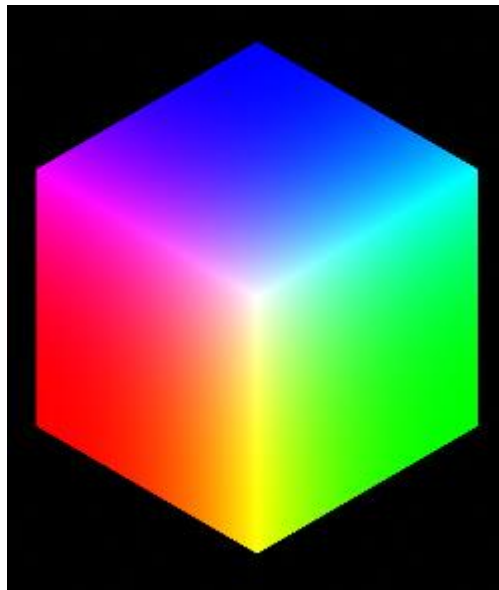


6. If you wish to apply the filter to UI elements, set the *Render Mode* to “Screenspace – Camera”. Then change the *Render Camera* to be the camera with the **Post Processing Layer** attached.

Alternatively, after step 1, you can add the CVDFilter script directly to any object and the required Post Process Volume will be added to your game object automatically.

Which filters are included?

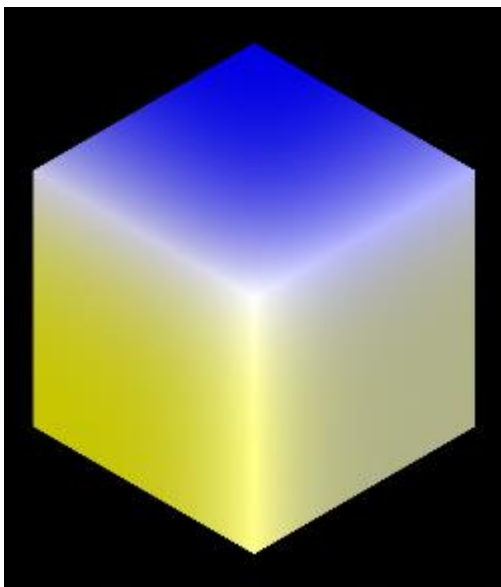
No Deficiency



**Normal**

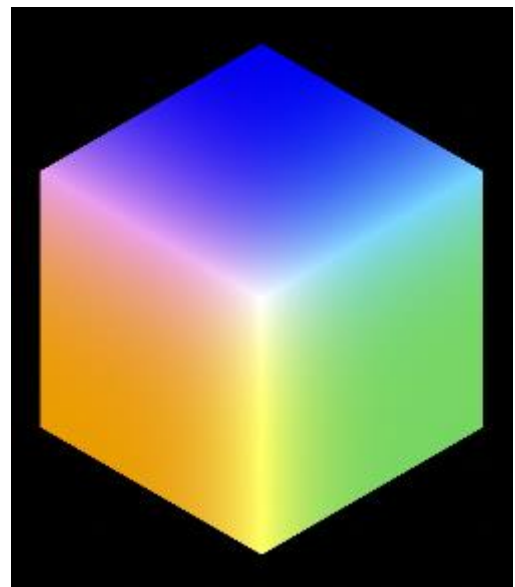
This filter applies no color correction, this is the default.

Red Deficient



**Protanopia**

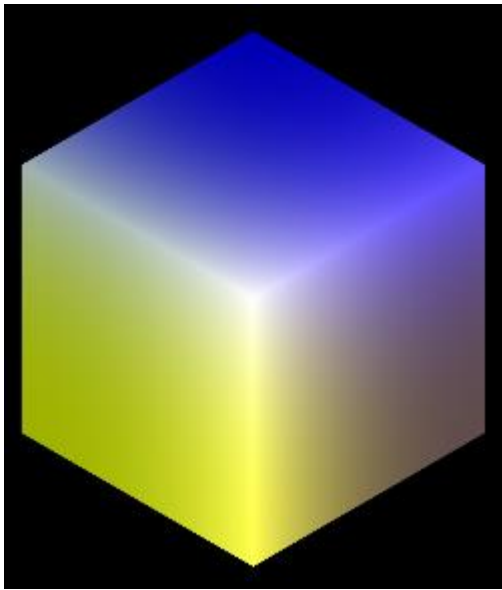
Simulates missing red cones



**Protanomaly**

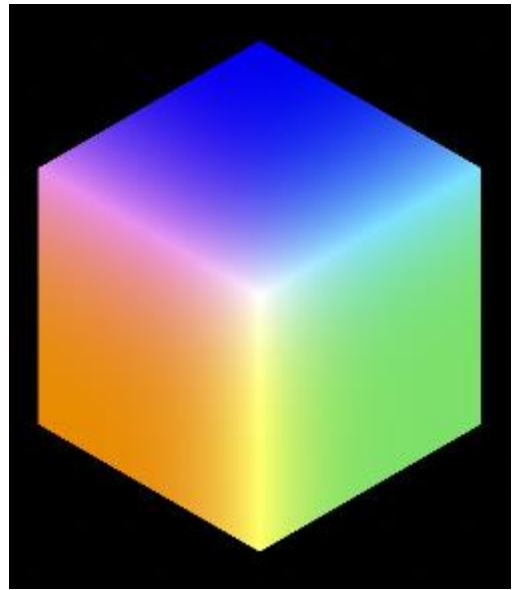
Simulates reduced sensitivity red cones

## Green Deficient



**Deutanopia**

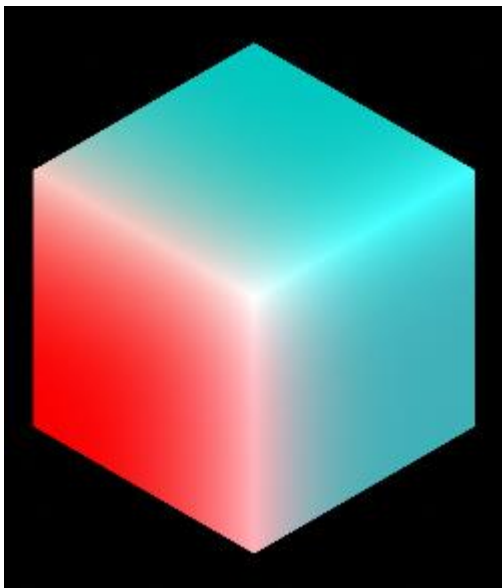
Simulates missing green cones



**Deuteranomaly**

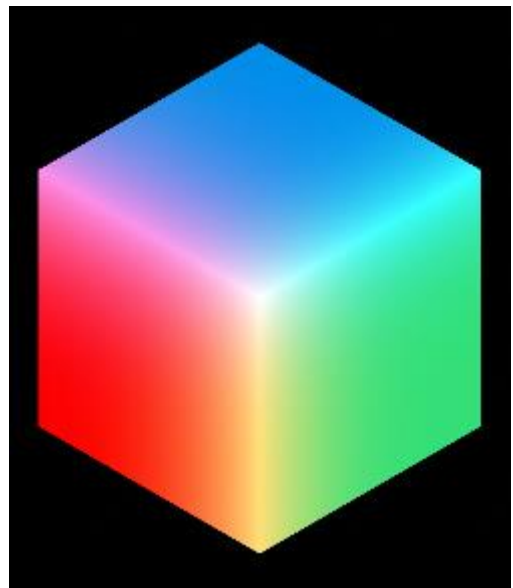
Simulates reduced sensitivity green cones

## Blue Deficient



**Tritanopia**

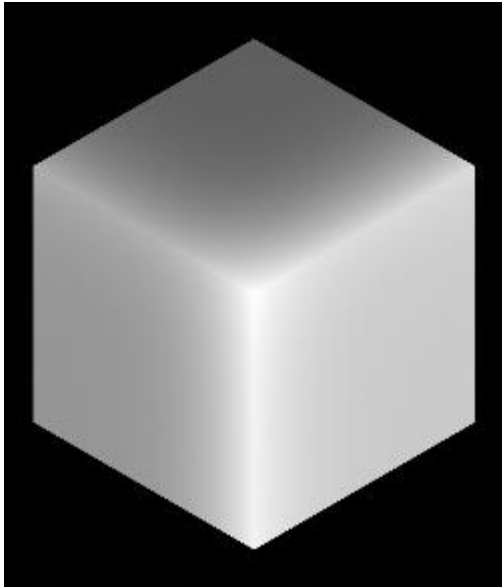
Simulates missing blue cones



**Tritanomaly**

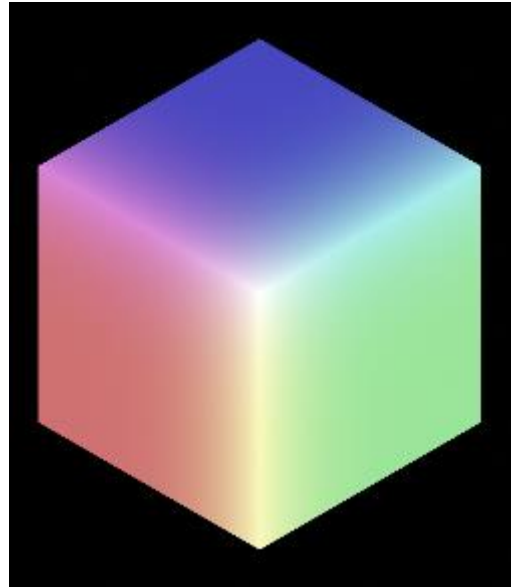
Simulates reduced sensitivity blue cones

## All Deficient



### **Achromatopsia**

Simulates completely missing cones  
(greyscale)



### **Achromatomaly**

Simulates reduced sensitivity of all cones

*Note: There are also forms of CVD where two cones can be missing or defective, this is called monochromacy and is incredibly rare. Filters for these conditions are not currently included in this collection. However, you can simulate the effect using the Achromatopsia filter.*

## All the other Stuff

This asset is distributed for free via the Unity Asset store. If you found it somewhere else, please let me know.

If you found this asset useful, tell your friends and link them to the Unity Asset Store page. The more developers thinking about this sort of thing the better!

Contact Us:

<https://www.facebook.com/SlightlyOddGames/>