Color Blindness Simulator for Unity
Version 1.0.0

User Guide

Color Blindness Simulator for Unity, version 1.0.0

The Color Blindness Simulator for Unity is free software that has been distributed under the terms of the MIT License.

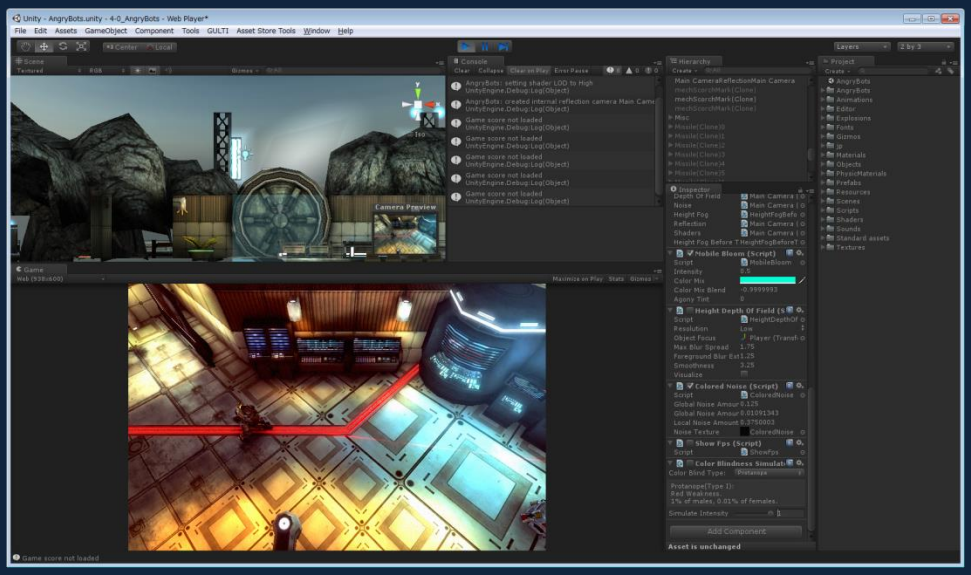
System Requirements

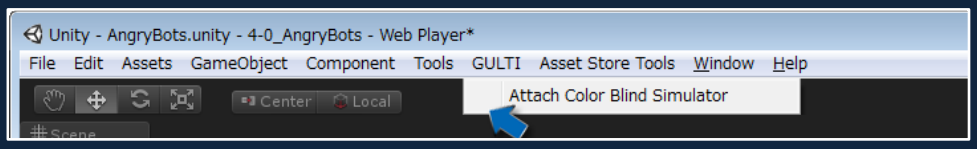
Requires Unity 4.1or higher. Unity Pro is required, as is iOS Pro/Android Pro for projects that target those respective platforms.

A runtime environment that can run Image Effects is required. Hardware must support Shader Model 3.0.

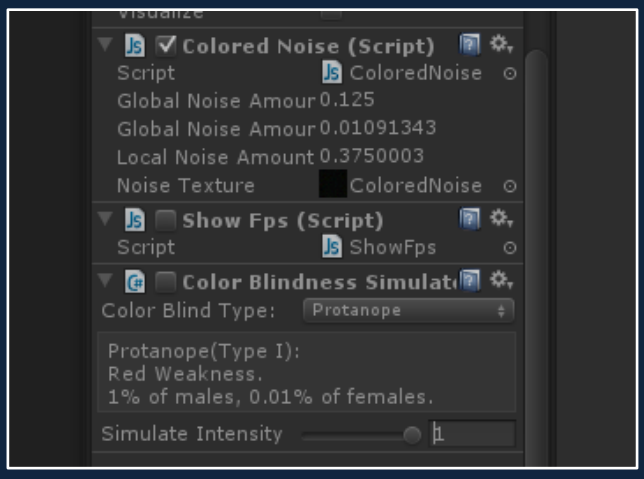
Table of Contents

How to Use



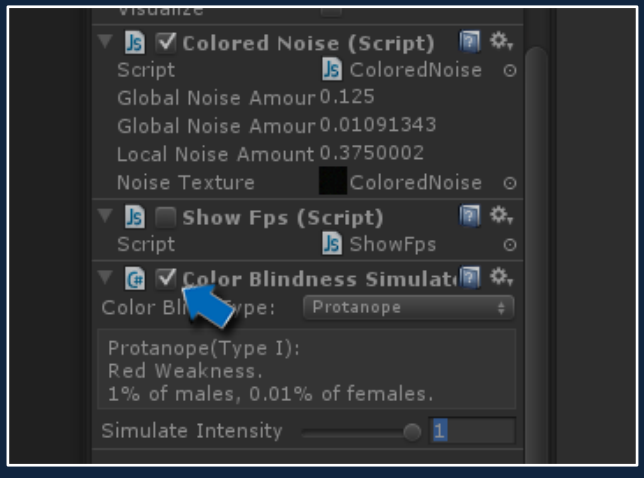


To run a simulation, select the camera you would like to test in the Hierarchy window of Unity. Then, click on the GULTI tab in the menu and select Attach Color Blind Simulator.



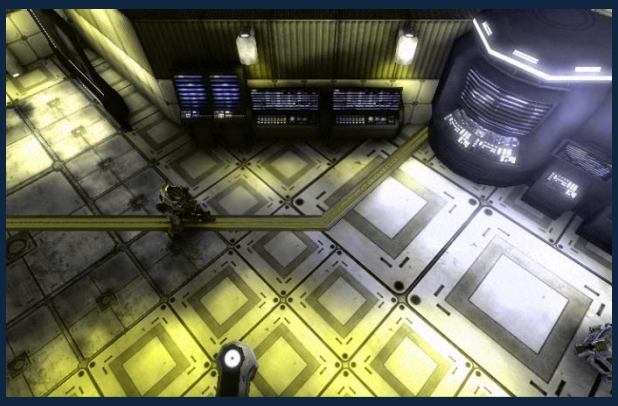
A component named ***Color Blindness Simulator (Script)*** will be added to the Hierarchy window. You can select the type of color blindness and adjust intensity in this component.

Switching the Simulator On/Off



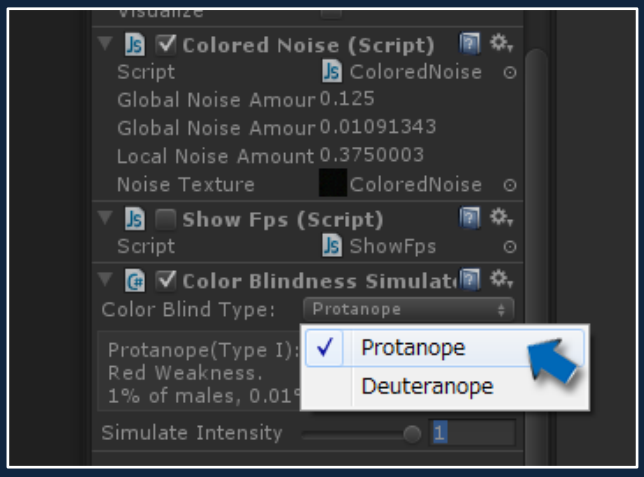
To turn the simulator off, simply uncheck the box next to the name of the component (***Color Blindness Simulator (Script)***). Check the box again to turn the simulator back on.

Original scene

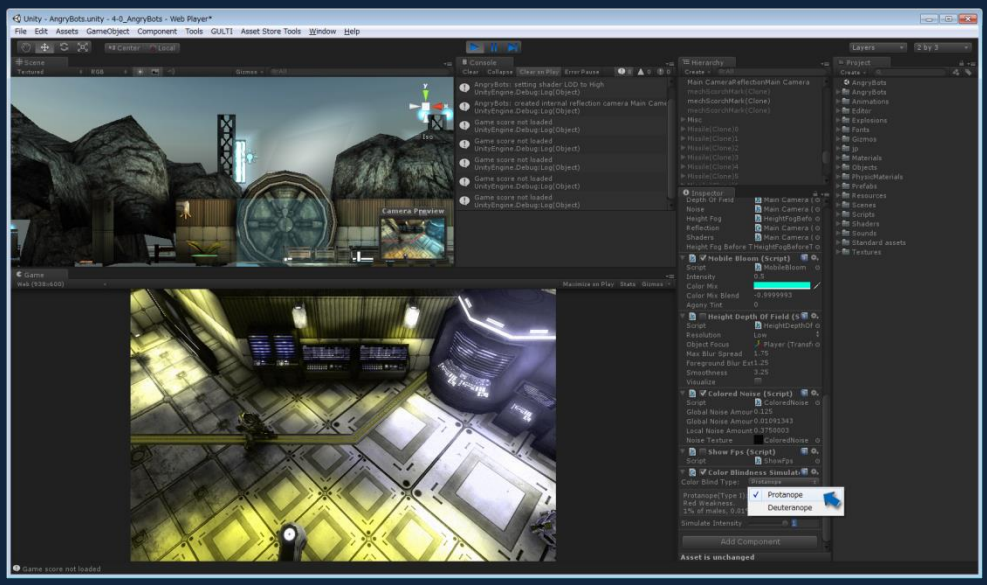


Scene with simulator on

Protanope Simulator

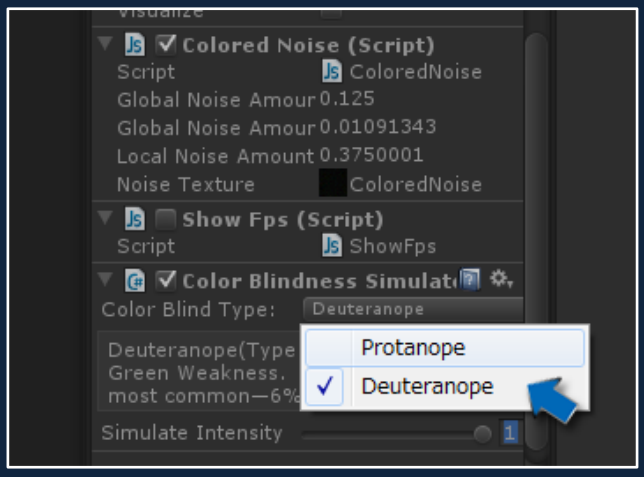


To simulate how a person with Protanopia would view your scene, select ***Protanope*** in the drop down menu next to ***Color Blind Type***.

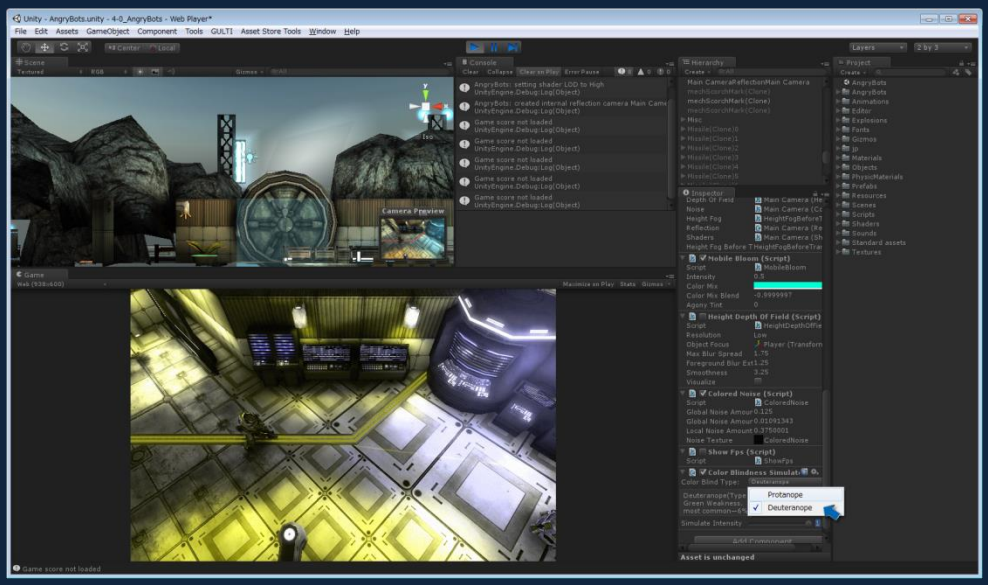


Protanopes have impaired long-wavelength cones (or L-cones) or no L-cones at all. Approximately 1% of all men and 0.01% of all women in the world have Protanopia.

Deuteranope Simulator

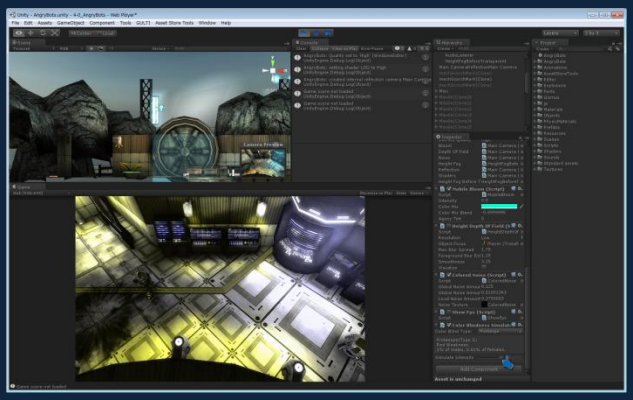


To simulate how a person with Deuteranopia would view your scene, select ***Deuteranope*** in the drop down menu next to ***Color Blind Type***.

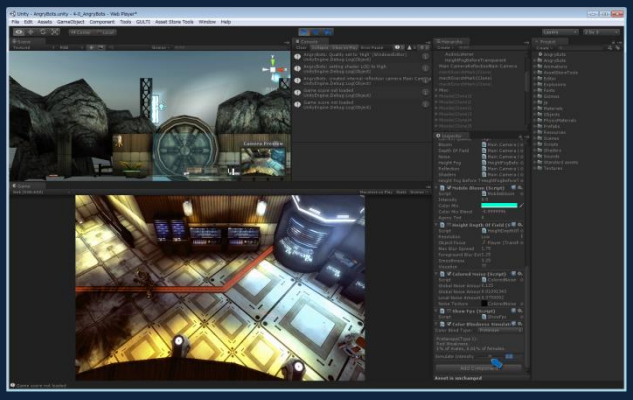


Deuteranopes have weak middle-wavelength cones (or M-cones) or no M-cones at all. Approximately 6% of all men and 0.4% of all women in the world have Deuteranopia.

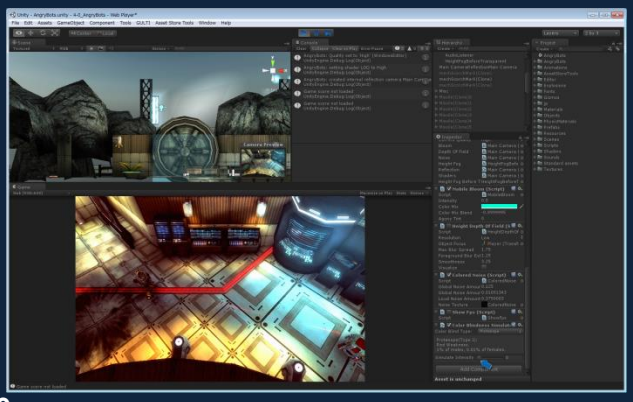
Adjusting Intensity of Color Blindness Simulator



1



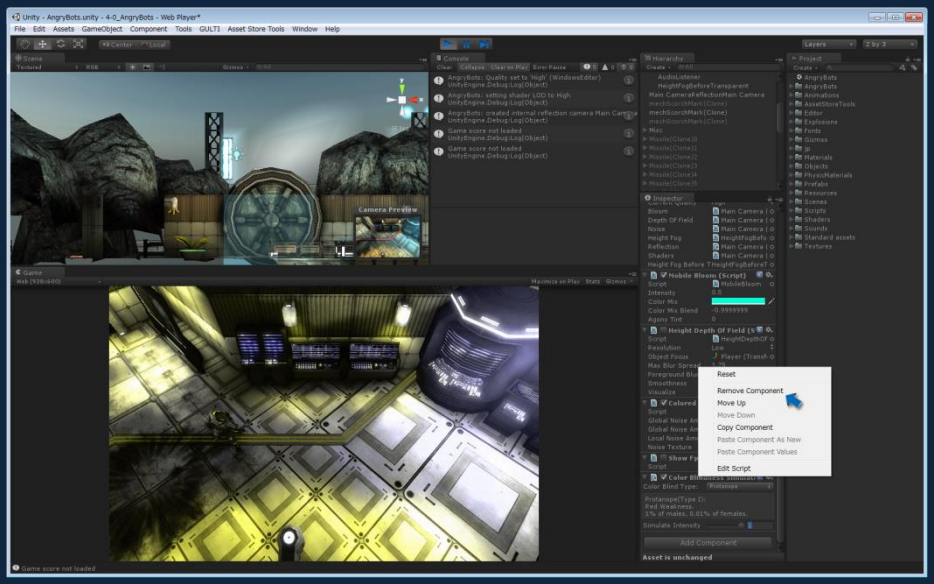
0.5



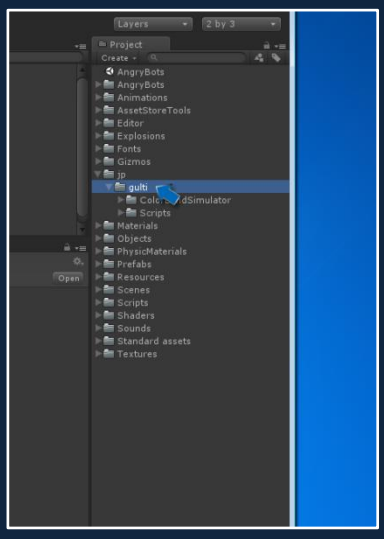
0

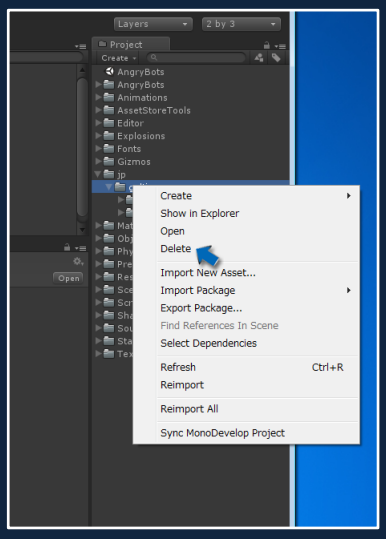
You can adjust the intensity of the degree of color blindness with the slider marked ***Simulate Intensity***. The strongest setting – which simulates cones that are completely impaired or missing all together – is 1.0.
The simulator is basically off when the slider is set to 0.0.

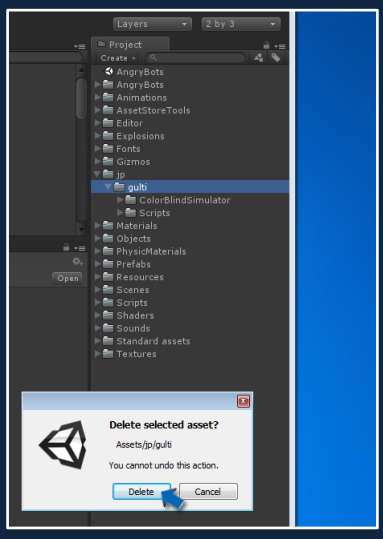
Removing the Simulator



To remove the simulator, right-click while over the component and select Remove Component from the menu.







To remove the simulator completely from the project, right-click on the *gulti* folder within the *jp* folder of your Project window and select Delete.

Controlling the Simulator via Script

You can also control the simulator via script.
Switch between the types of color blindness by retrieving the ColorBlindnessSimulator component and changing the value for BlindMode. Turn the simulator off by marking "enabled" as "false".

More Information on the Simulator

Verified by the Color Universal Design Organization

Color Universal Design Organization (CUDO) provided valuable cooperation in the project. Gulti designed and developed the ***Color Blindness Simulator for Unity*** using reference materials supplied by the NPO.

The simulator was then tested by CUDO for color generation and accuracy for color blind persons, scoring high marks across the board.

MacBook Pro connected via DisplayPort NEC Display MultiSync P242w 6500K/γ2.2/120cd Color temperature: 6500K	Average scores per color blindness type: Protanopia 93.3% Deuteranopia 99.5% Overall average 96.4%

'14 COLOR UNIVERSAL DESIGN

The Color Universal Design Organization grants permission to display the CUD mark only to publications and goods that have been verified by the organization.

Color Universal Design Organization (non-profit)
URL : http://www.cudo.jp/

References

Digital Video Colourmaps for Checking the Legibility of Displays by Dichromats
Viénot et al. 1999

Computerized simulation of color appearance for dichromats
Brettel et al. 1997

Credits for Images Used in this Guide

The images used in this guide are from Unity Technologies demo ***Angry Bots***.
URL: https://www.assetstore.unity3d.com/jp/#!/content/12175

unity

Unity
URL : http://japan.unity3d.com/

Contact Information for Questions/Inquiries

Gulti Co., Ltd.
http://www.gulti.jp/

Unity Forum: Color Blindness Simulator for Unity
http://forum.unity3d.com/threads/color-blindness-simulator-for-unity-by-gulti-co-ltd.252758/


GULTI