# Sprite Variants - Documentation

## [CREDITS]

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## [SUMMARY]

Generate variants of sprites changing their color, saturation and intensity. Alter the color of the entire sprite or of individual color regions automatically detected by the system. Ideal for procedural generation of new items, characters and weapons.

## [FEATURES]

- Region-based: Alter the color of the entire sprite or of specific regions automatically detected by the system.

- Customizable Variant Regions: Fine tune each variant region to include the area to be altered.

- Custom and Random Variants: Generate sprite variants with custom changes or randomized.

- Generate in Editor and at Runtime: Setup the color regions in the Editor and generate Variants both at Runtime and in Editor.

- High Performance: Capable of generating large amounts of sprite variants at runtime without a noticeable performance impact.

## [USAGE]

1. Setup GameObject with SpriteRenderer with desired Sprite. The Sprite must be set as Read/Write Enabled in the Import Settings.
2. Add a SpriteVariants Component to the GameObject
3. Setup the Color Regions for the Variant Generation (in the Inspector)
    a. Experiment with different Color Spaces and Threshold values to Detect Regions and define them as desired
        i. Cycle the defined regions with View Next Region
        ii. Use Combine Regions to manually combine 2 regions
    b. Setup each region's settings by cycling to it and defining Region Variation and selecting the desired Hue and the Saturation and Value Additives to be applied for that region.

4. Generate Variants
    a. In Editor
        i. Generate Variant to produce a Variant with the defined Hue and the Saturation and Value Additives values.
        ii. Generate Random Variant to produce a Variant with a random value for Hue and Saturation and Value Additives.
        iii. Generate Random Variant (Bounded) to produce a Variant with a random value of Hue but with Saturation and Value Additives limited by the existing maximum and minimum Saturation and Value values. This produces more realistic results compared to the non-bounded version.
        iv. The generated variant can be saved to the Project Assets list as a .png by using Save Variant.
    b. At Runtime
        i. Call *GenerateVariant*, *GenerateRandomVariant* or *GenerateRandomVariantBounded* with the same considerations as with In Editor. These return a Texture2D ready to be used.
            1. The defined Hue and the Saturation and Value Additives values for each region can be changed by accessing the *regions* attribute of SpriteVariants. Each setting can also be toggled to vary or not with the *varied* attribute.
            2. *SpriteVariants.GetVariedRegions* returns the Color Regions that are currently set to be varied.
            3. The Random versions of the Variant Generation Functions receive booleans to set which color component should be randomized, Hue, Saturation and Value.

Sprites from sprite sheets (Sprite Mode Multiple) will work fine without further tweaks
Sprites from Sprite Atlas require the atlas to have Tight Packing set to OFF

## [PERFORMANCE]

The performance of this tool depends primarily on the size of the Texture2D of which the Variants are being generated from.

## [CLOSING]

Thank you for purchasing this asset.

If you need any help, support or even have suggestions or requests feel free to contact me by email