CHROMA KEY

What Is Chroma Key Compositing?

Chroma key compositing is a visual effects technique that involves using green screen technology, including chroma key software, to manipulate an image captured with a camera. By automatically selecting a specific color in post-production, video editors can remove the background from the image. Substitute backgrounds can place actors in a new setting, and background videos might feature interactive animations.

How Does Chroma Keying Work?

The basis of the chroma key effect is color contrast. The technique's key component is the selection of a specific, evenly-lit solid-color surface. Usually, this is a bright green screen background, although filmmakers use a blue screen background in some cases. This distinctive green or blue color, known as the key color, is unlikely to match any objects in the foreground, including the clothes and skin tones of the actors in a scene.

Visual effects software will recognize the key color, erasing all image areas where the color occurs, and substitute a different background. This might be an image captured separately, such as a different location shot on another day, or one that is entirely computer-generated, such as the deck of a starship.

How Is Chroma Keying Used in Film?

In filmmaking, editors use chroma keying to create cinematic illusions. Since the rise of visual effects and the advancement of computer technology, editors use chroma keying in all types of productions, from Hollywood mega-franchises to mid-level dramas. Video editing teams use chroma keying to do the following:

- **To switch out backgrounds**: Chroma keyed backgrounds can range from the fantastical to the mundane. Before the widespread adoption of computers, filmmakers would create the illusion of environments that could not be practically shot with elaborate miniatures or highly detailed matte paintings. Today, if your film involves alien landscapes, you might shoot your characters in front of a green screen backdrop and swap it with a static or animated background in post-production. If you want to set a scene in a moving car, you might shoot it in front of a green screen then use chroma key technology to replace it with footage from a separate vehicle.

- **To augment or obscure backgrounds**: You can use the chroma key technique to change certain elements of the background. If you are shooting a period film on a crowded city street, you might want to block out contemporary buildings with strategically placed green backdrops or flags. You can selectively edit your background image to suit the purposes of your film.
- **To change foreground elements**: Modern superhero films make extensive use of green screen footage. If your main character wears a complex suit that a [costume designer](#) cannot build to function practically, you can place green fabric on parts of the costume. In post-production, these colored areas can be switched out with computer generated images (CGI) to simulate the high-tech functions for that costume.

7 Steps of the Chroma Key Process

There are a few important guidelines for filmmakers when using chroma key compositing. The following tutorial outlines how to use the technique:

1. 1. **Choose the right color**. While green screens are traditionally the most common, in some scenarios, such as low-light situations or scenes where a similar color green might appear on a character or prop, blue is a better choice.
2. 2. **Set up your screen**. Hang your green screen on a frame so that it will fill the entire background of your shot. Make sure it's as flat as possible, with no wrinkles or tears. If the green screen is collapsible or has been folded up in storage, use an iron to smooth out the creases and wrinkles. If you don't want to deal with wrinkles, look into purchasing or renting a wrinkle-resistant matte screen.
3. 3. **Pay close attention to your lighting levels**. Lighting can make or break a green screen scene. To be convincing, your lighting must be consistent in both the foreground and background footage. If the sun is bright in the background footage and muted in the foreground footage, it will ruin the illusion as the background and foreground will not be cohesive.
4. 4. **Properly distance your camera**. Camera distance is very important: the depth of field in both foreground and background footage should match, otherwise the composite image will look strange to the human eye and will immediately distract viewers.
5. 5. **Use green screen effects software**. When you finish filming, and the cut is more or less locked, it is time to chroma key with special effects software, such as Final Cut Pro or Adobe Premiere Pro or After Effects. (If the new background or materials involve complex animation, this process may happen during shooting and throughout the editing process.)
6. 6. **Chroma key the image**. Typical video editing software comes standard with video effects like chroma key. In Adobe, this tool is known as the Ultra Key. Select the background color, then store and save it. Remove any artifacts from the image to create the cleanest key possible. Some advanced software automates this process.

7. 7. **Replace the image**. After you chroma key the footage, replace it with the desired background. Some programs automate the substitution process, but you can manually replace the image for precision.

Chroma Key Node

The *Chroma Key* node determines if a pixel is a foreground or background (and thereby should be transparent) based on its chroma values.

Use this, for example, to composite images that have been shot in front of a green or blue screen.

Inputs

Image

Standard color input.

Key Color

The background color usually selected using the color picker and the original image.

Properties

Acceptance

An angle on the color wheel that represents how tolerant the keying color is. Larger angles allow for larger variation in the keying color to be considered background pixels.

Cutoff

Controls the level that is considered the pure background. Higher cutoff levels mean more pixels will be 100% transparent if they are within the angle tolerance.

Falloff

Increase to make nearby pixels partially transparent producing a smoother blend along the edges.

Outputs

Image

Image with its alpha channel adjusted for the keyed selection.

Matte

A black-and-white alpha mask of the key.

REFERENCES:

https://www.masterclass.com/articles/chroma-key-guide

https://docs.blender.org/manual/en/latest/compositing/types/matte/chroma_key.html