

If your multirotor already includes the camera gimbal setup, you can use this for both photography and video.



AERIAL PHOTOGRAPHY 101

HOW TO SHOOT YOUR OWN AERIAL PHOTOS OF THE WORLD

BY JOHN REID

Thanks to the advent of smaller and lighter cameras that can easily be attached to our multirotors, more and more pilots are getting their high-quality shots and HD video from the sky. Let's discuss lifting cameras into the sky by multirotor and how to guide your camera through the air. Be sure to also stay tuned for a future issue when we'll concentrate on the best aerial video techniques.



A hard mount onto the drone is perfectly fine for photography. The soft mount is only needed for video.

CAMERA ATTACHMENT

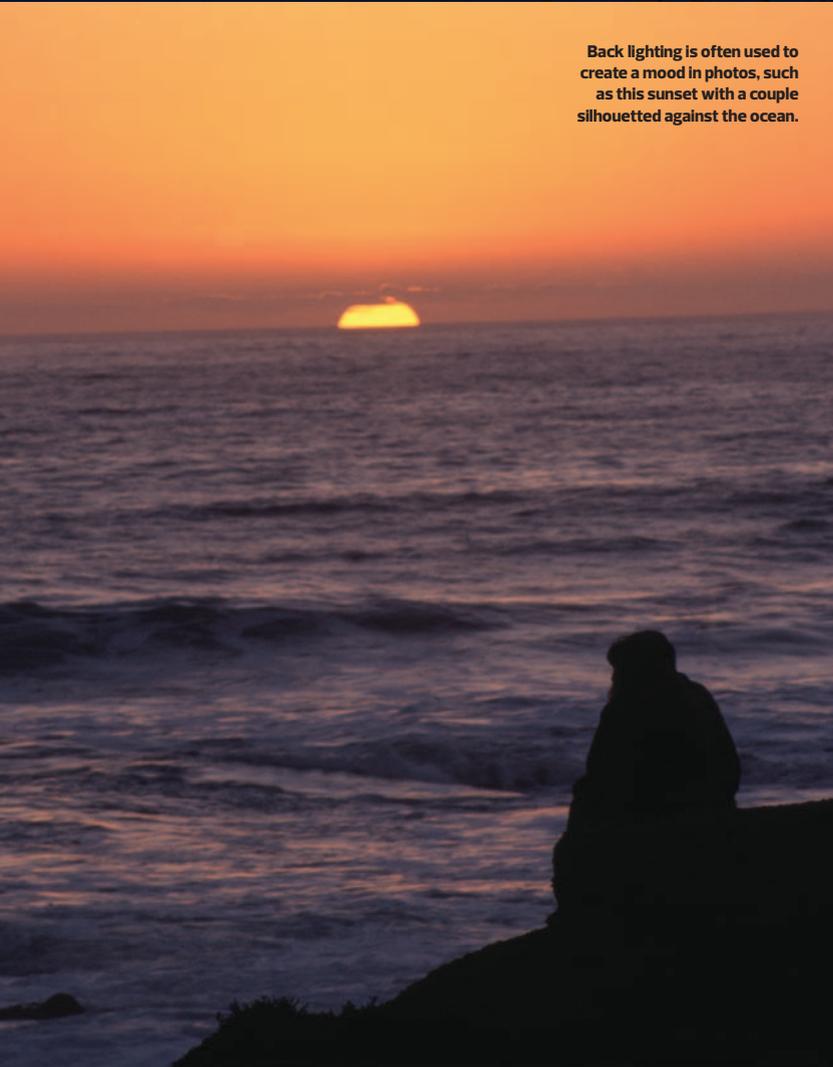
Keep in mind that it really doesn't matter how we attach the camera to the multirotors because most of our shots will be within the hundreds or thousands of a second. Therefore, we don't have to worry about the vibration that is produced from the four or more motors. When taking video, we have to isolate the camera from the frame of the multirotor to prevent the dreaded Jell-O effect in our videos. When shooting photographs, all that is needed is to have the camera mounted to the rig securely. If there is a gimbal setup already installed there is no reason not to use that same setup as a photographic mount.

FLYING MODES BEST FOR PHOTOGRAPHY

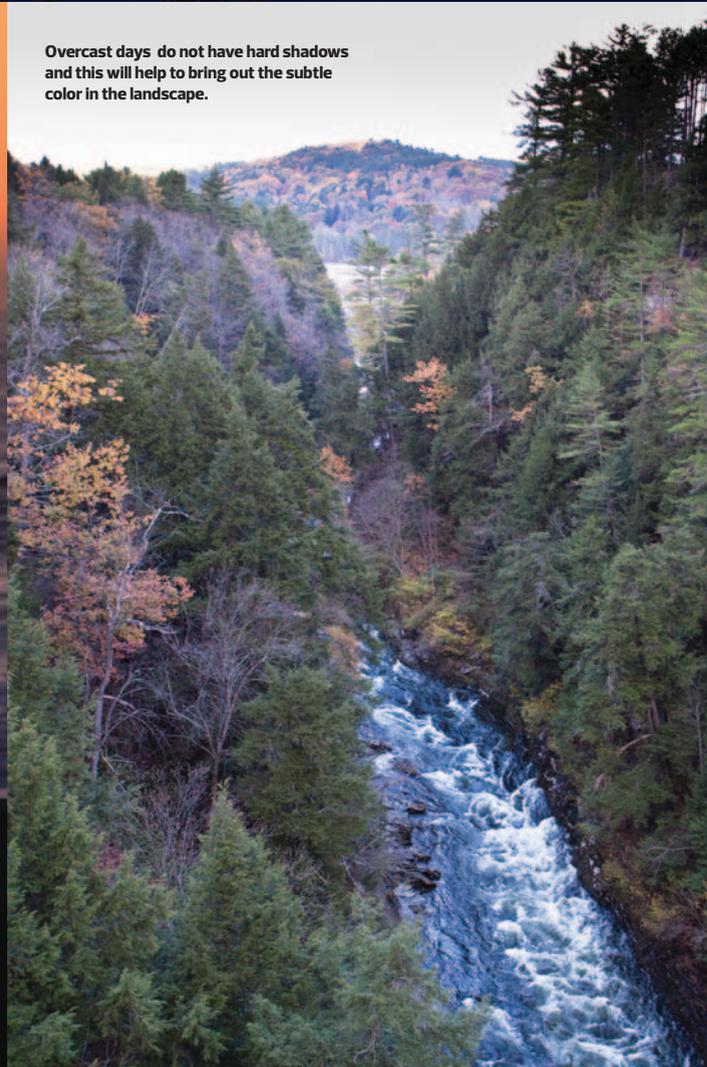
In all actuality, any multirotor flying mode will work well when doing still images from the air. The photograph can be produced just as easily while the multirotor is moving as well as it can when it is hovering. Because of the way I take photos from the air, I tend to fly in the GPS assist mode. This mode allows the aircraft to stabilize



Another good example of early morning light that helps define the landscape and brings out the color and texture.



Back lighting is often used to create a mood in photos, such as this sunset with a couple silhouetted against the ocean.



Overcast days do not have hard shadows and this will help to bring out the subtle color in the landscape.



Another good use for overcast days is doing aerial architectural photography. The soft light lends itself well to photographing buildings.

On static, landscape types of shots, the camera can be set up to take a photograph every 3–5 seconds. Because nothing is really moving, it is easy enough to hover the aircraft in one spot for 6 to 10 seconds to take a couple of shots.

It's a three-dimensional space without drifting or moving around. This makes it much easier for me to plan the shot because I can just place the drone where I want it and wait for the photo.

FLYING TECHNIQUES

When taking photographs from the air, I tend to fly the multirotor to the designated location and then have it hover there to take the shot. I will have the camera set up to take a photograph every few seconds. Once I have the aircraft hovering in the location for the photo, I let it sit there for at least the length of time it will take to make the next exposure. For example, if I have my camera set to make an exposure every two seconds, I will hover the multirotor in that location, let it sit there for at least three seconds, then move to the next location. This will guarantee me at least one shot from the spot I want it to shoot from.

DIFFERENT SHOT TYPE

There are two main photo types one can make from the air, landscape shots (things that are not moving) and action shots (things that are moving).

On static, landscape types of shots the

camera can be set up to take a photograph every 3–5 seconds apart. Because nothing is really moving, it is easy enough to hover the aircraft in one spot for 6 to 10 seconds to take a couple of shots. This way, the multirotor is not shooting a large number of photos while going from point A to point B. This is especially useful when you have a smaller size storage card in the camera.

For the action types of shots, it is much better to have the camera taking photographs as quickly as possible; for this type of shooting I will set the camera to take photos 0.5 seconds apart. Because the action happens so quickly, such as a motorcycle jump, you want to increase the chance of getting that shot when the motorcycle is at its peak of action, or the top of the jump.

Where you locate the camera can also help improve your chances of getting the photograph. If the multirotor is located so that the motorcycle rider flies across the frame, he will be in view for a very short moment, maybe less than 0.5 seconds (this is the shortest time the camera can take the photos). However, if the aircraft is placed so that it is at a 45-degree angle to the jump, the rider will stay in frame

BASIC CAMERA CONTROLS

F-STOP: This controls the amount or volume of light that can pass through the lens while the shutter is open. The lower the number, the larger the opening, the greater the volume of light that can pass through the lens. This is called "opening up." The higher the number, the smaller the opening is and the less volume of light that can pass through the lens. This is called "stopping down." Artistically, the f-stop opening controls the depth-of-field in our photo, which is the amount of sharpness from the front to the back of the image.

SHUTTER SPEED: This controls the amount of time the light has to pass through the lens. This represents fractions of a second, such as 1/30 or 1/125 of a second. The smaller the number, the more time light is allowed to expose on the digital sensor. The higher the number, the less time light has to expose on the digital sensor. Artistically, this controls the amount of motion blur in the photograph. The lower the number, the longer the time, and the larger the amounts of motion blur in the photo.

ISO: This sets how sensitive the camera sensor is to light; the higher the number the less light it needs to make a proper exposure. The ISO sets the level or amount of light needed by the light meter to make a correct exposed image. The higher the ISO setting, the more noise that is possible to be introduced into the image. This is the unwanted speckles of different colors where there should be none. For example, instead of a blue sky, you notice faint pink, purple, and other color speckles amongst the otherwise blue sky.

FOCUS: A camera lens is sharp only in one spot and that is where the lens is focused. This can be done manually by the photographer by using the focus ring on the lens (manual focus) or by letting the camera do it (auto focus).



Sidelighting is some of the best type of lighting for aerial landscapes. However, notice how this sidelight is not as good as the photo below, that's because it is taken later in the morning, about two to three hours after sunrise.



This sidelight is perfect for our aerial landscape, it is just minutes before the sun sets. Notice the nice long open shadows that helps bring out the detail and texture of the landscape.

for a longer period of time, as long as a second. This angle helps to improve the odds of getting the photo you want.

SUNLIGHT, BEST TIME OF DAY

Throughout the day, the quality of light changes as the sun moves across the sky (assuming there are no clouds) so there are certain times of the day that will make for better aerial images. The best time is right after sunrise and just before sunset, within an hour of each. With the low sunlight coming across the landscape,

various attributes of the land are highlighted with low-casting shadows. At the same time, the light will tend to be much warmer than it is in the afternoon (yellow/orange in color) — this is referred to by photographers as “golden light.”

I tend to shoot early in the morning because of weather conditions in most areas that I'm photographing. In the morning there's generally a lot less wind than there is in the afternoon, which makes it easier for me to fly the multirotor around. The downside to shooting

early in the morning is that you have to wake up early and be on location before the sunrises, to take full advantage of the first rays of the early morning sun. The second downside, if it could be considered that, is that the golden light seems to dissipate much sooner in the morning than it does during the later afternoon before sunset.

ANGLES OF LIGHT

The angle or direction of sunlight is relevant to the location of the multirotor and its relationship to the location of the sun and the direction the camera is pointing. These lighting angles can be broken down into three main categories: sidelight, backlight and front light.

Sidelight: This lighting can be very dramatic and often happens early morning after sunrise and late afternoon before sunset. Whenever the light is coming from the side of the photograph (or the view of the camera) it is considered side lighting. This lighting tends to really emphasize the texture of the landscape.

Backlight: This type of lighting is often used to create a feeling/mood in the photograph. It is always used to create any type of silhouette photograph, such as a surfer standing on the beach looking out into the sunset. This lighting is achieved by having your light source (the sun) in front of the camera behind the main subject in the photograph.

Front light: This type of lighting tends to create a flat look to the landscape. When the sunlight is coming from behind the multirotor/camera it will produce front lighting on the landscape. This is good lighting for subjects that are in front of the landscape such as people or vehicles. This is the type of lighting that is often used for aerial photos of buildings, cityscapes or large man-made objects. One thing you have to be careful about using this type of lighting is to not get the shadow of your aircraft in the photograph. This can easily happen with the sun behind the multirotor.

DAYLIGHT AND NIGHTTIME SHOOTING

When shooting during the day, use a lower ISO setting on the camera (ISO 100) this will give a better-quality image. As for the setting on the camera, try to use a midrange f-stop (f4 to f11) and shutter speed (1/125 to 1/500) combination if there is enough light to permit those settings.

For nighttime shooting, first make sure that your multirotor has different color lights in the front and the back so that you always know which direction it is moving. Use a much higher ISO setting (ISO 1600 and up) so you can keep the shutter speed on your camera up to at least one 1/125 of the second. This will also require the aperture to be set at the maximum open f-stop (f1.5 to f2.8). You will likely need some noise reduction software that you can use in post to bring the image quality back up.

By following some of these tips, you can easily improve your aerial photography and create those masterful works of art that you can proudly put on display! 🚁