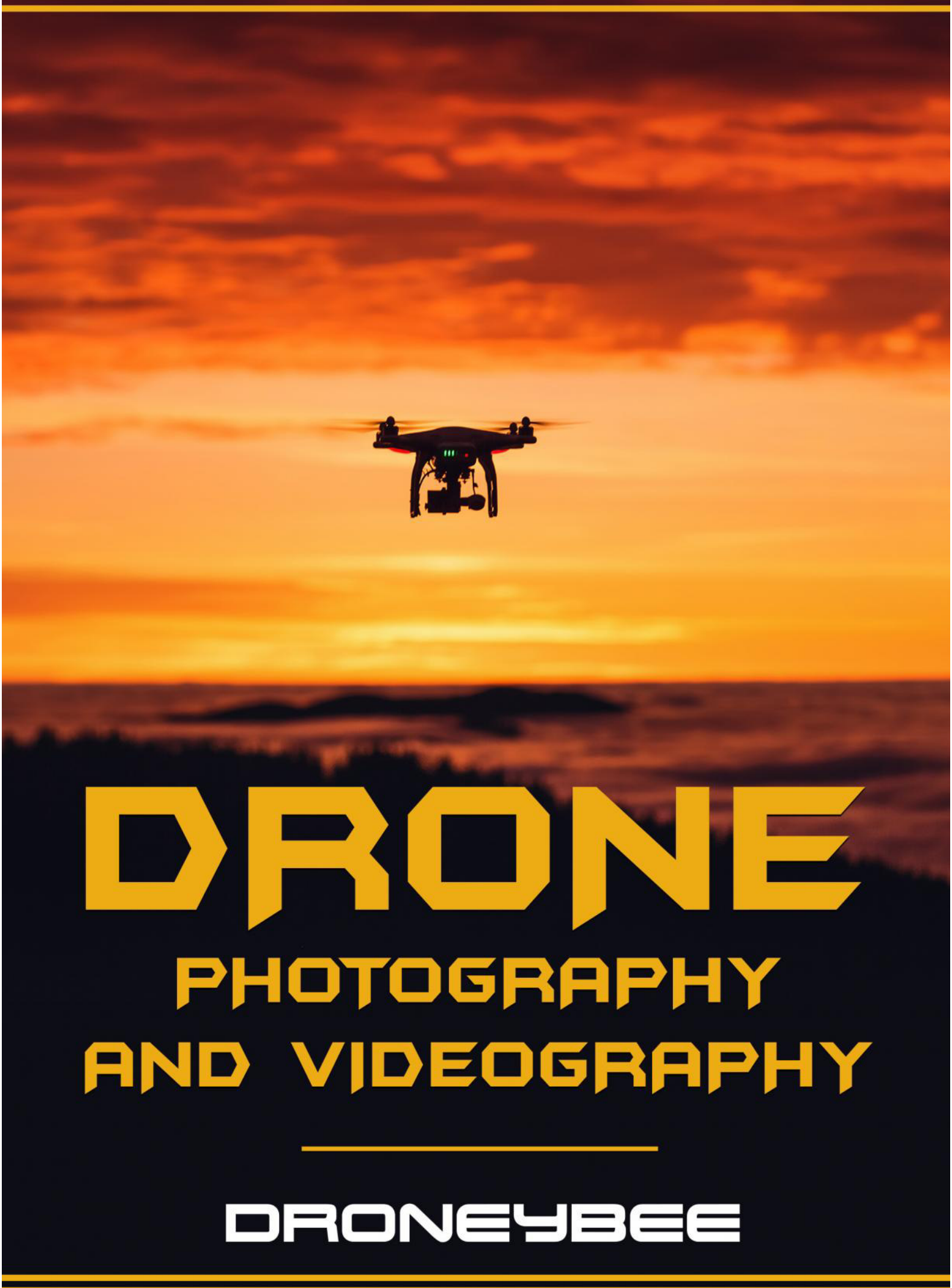


DRONE

PHOTOGRAPHY AND VIDEOGRAPHY

DRONEYBEE

Contents

Introduction

Aerial photography and videography have been around for a long time and let's face it: Good aerial photographs and videos are absolutely stunning pieces of art. However, getting aerial shots up until today has been very difficult. Getting into a life sized helicopter, getting up in the sky and taking quality pictures and video is not only time consuming but also expensive and inaccessible for most people.

With the advent of drones, we can now take aerial work to the next level. Not only is it easier and more achievable for just about anyone to do aerial work, the maneuverability with drones also make it possible to capture the kind of pictures and video that were impossible before with life sized aircrafts.

This is not to say that capturing good images and clips with drones are easy though. Just about anyone can take a Phantom drone up in the sky, tilt the camera down and call it a day. Taking quality pictures and video will require you to put in the effort to get good at it. Even if you are or have been a professional photographer, drone work has its own unique set of challenges.

If you want to learn how to actually capture good images and videos with drones then congratulations are in order - You have picked up the right manual! This is the most condensed manual you will find that covers the most important topics on the matter.

Read this twice or thrice (which should be easy) and you will know everything there is to know to start and get ahead in the game.

We shall first cover the fundamentals of drone aerial photography. That is, what you need to absolutely know before getting out there capturing pictures. Don't think of them as a set of fixed laws (like anything in this manual). Rather, think of them as frameworks that will guide you. We'll then move into panoramas and HDR bracketing.

Next, we will cover the fundamentals of capturing aerial videos with drones and then learn some filming techniques and moves that you can master to help you become a well-rounded drone cinematographer.

You will also be learning how to creating a proper workflow and how to dive into post production of your photos and videos towards the end of this manual.

Please note: It is highly recommended that you become a good pilot before jumping into aerial photography and videography. Learn and apply the chapters from the drone pilot's manual and THEN come back here. Not only will becoming a better pilot enable you to take better shots, it will also ensure that you remain safe at all times, in case things go south.

Also note: Avoid flying your drone near airports, heli-pads, nuclear reactors and other sensitive zones and do not to overstep privacy boundaries. If you want to fly in a land owned by private

individuals, contact them and ask for their permission. Make sure do not fly in **locations** that you are not supposed

Fundamental elements of taking aerial pictures

Planning the flight and shots

Never think that your best shot will be from the angle you are currently looking at the object(s). Remember to explore the relationship of the object(s) with its surroundings from different angles point of view.

You may start to notice that the contrast, lighting and the overall ambience of the scene changes with the change in point of view. With drones, you have the power of moving around freely in X, Y and Z axes. Make sure you utilize the freedom!

Assuming you have mastered flying a drone, flying manual will give you the most control in positioning and angling your drone for the best possible shot. With all other modes, you lose control in favor of ease and safety of flight.

With GPS mode, your craft flies autonomously but that is only good for getting from your take off zone to where your target for capture is and the constant self-correction mechanism of auto-

level mode will work against your will when you try to position your drone for that perfect capture.

But before you head out on your drone photography and videography missions, you need to know how to make an estimate on how long and how much iteration you might need to get that perfect should.

Take into account the following considerations:

- The number of battery packs you may need: Get more battery packs if you think you will be out for a while.
- The distance from where you will start your flight to where the target of your photography/video is located.
- Whether or not you will need to make multiple passes and take multiple shots of your target.
- Whether or not you'll be able to take off and land safely on the said location.

Also, perform the following equipment checks:

- Make sure you have enough free space on your memory card.
- Batteries must be fully charged, balanced and healthy (no puffing, for example).
- Balance the propellers to avoid 'Jello' effect. Make sure they are fitted rightly.
- Make sure the firmware is updated.

- Calibrate your gimbal and trim your transmitters.
- Make sure the camera is functional, clean and free of dust and other particles.

Other than making sure your equipment is all good, there are a couple more things you must check:

- Make sure everyone in your team understands your flight plan (if you are working with a team)
- Turn off cell phones and other potential source of radio interference and make sure there are no cell towers nearby that could interfere with the communication link with your drone
- Scrutinize the flight location to check if you aren't breaking any law or invading anyone's privacy

Use websites like **donestragram** and **flytrex** to help you find good locations. Consider using Google maps for finding and planning your aerial photography and videography locations. Head out, fly regularly and join communities and before you know it, you'll have a large repertoire of potential places you would want to frequent for your aerial photography endeavors.

Altitude

Give someone a drone and they'd be tempted to fly as high as they can. Even though law limits you to fly at a maximum height of about 400 feet in most countries, even that height is more often than not, not the best possible altitude for drone photographs and videos.

The best and the most interesting captures are typically taken from low altitudes. Sure, you can take your drone to maximum altitudes and still get interesting shots but fly too high and the images and video will start looking like it was taken by a passenger sitting in an airplane. There are exceptions to this, of course.

Flying low is not recommended for inexperienced pilots, especially when flying above water and it is certainly not recommended if you are flying above places where there are lots of people, pets and objects around.

You can see why it is important to master flying with a cheaper quadcopter before taking a dive with your expensive craft. You miss out a LOT if you do not have the skills to fly low, maneuver and place your drone wherever you want to in order to make that perfect shot.

Ultimately you have to decide what altitude works best for the location you have picked and the target object of your capture. Don't assume that you've got the best possible shot of your target

until you have tried different altitudes and approaches for that particular target.

Light and time of the day

With drone photography, like any other form of photography, it is important to pick the correct time of the day before heading out unless you are taking shots indoors (in case of real estate, for example).

When shooting outdoors, your source of light is going to be the sun. There are two key factors that you have to take into account before shooting your target object (s). First, it is vital to know the location of the sun and the direction of light in relation to the object (s) and second, you need to make a decision on the time of the day to make the shot.

In most instances, you want the sunlight to be illuminating the side of the target object(s) that you want to take a picture of. In this case, the sunlight will be coming from behind the drone while it is facing the object to make the shot.

You do not want the camera to face the sunlight while trying to take a shot of the target object(s). There are exceptions to this and one of them is if you want to take a shot of the sunset/sunrise.

Use tools like photoephemeris to help you figure out the direction of the light at different timings throughout the day.

When planning the time of the day to take a shot, remember that clear days and afternoons are going to be harsh with straight

shadows and lots of glare. Days and afternoons are ideal for taking straight, top-down shots.

Most drone photographers prefer taking pictures either at dawn or dusk. These hours are perfect because the light is still there, but in a less harsh manner. Moreover, light travels further at this time and you can also get a clearer picture of faraway objects.

Enhancing with foreground

With drone aerial photography, you are going to be shooting things at a distance. When aerial photography was novel, you could get away with just "flying up" and getting a shot. However, that novelty is wearing off now that drone aerial photos have become incredibly common.

Dull and boring photos of distant objects can be greatly enhanced if you know how to enhance it with foreground elements. For example, when you are shooting a distant mountain at an angle, you could enhance the photo by using objects such as trees in the foreground to enhance the picture by adding contrast and composition to tell a unique story.

Again, flying low will give you more options for foreground. The higher you go, the harder it is going to be to find foreground elements. Remember that unlike regular photography, you have the ability to position your drone anywhere you want and with this flexibility comes the power to creatively enhance your pictures with foregrounds.

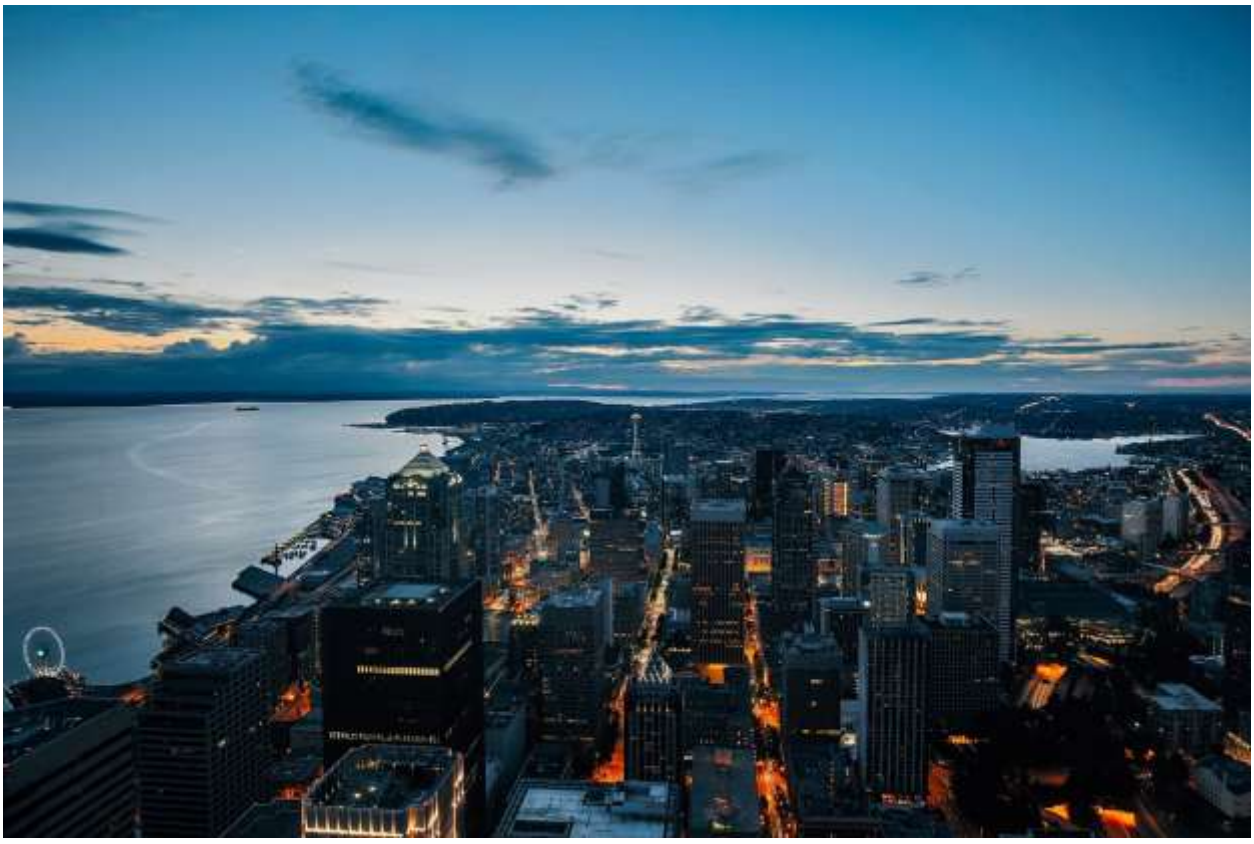
Manipulating the background

Manipulate how the background interacts with the foreground and other elements of your photo. With drones, you have the ability to move along the Z-axis. Try different altitudes to come up with the correct positioning of the background for the best possible composition.

You also need to understand how to contrast the background with the foreground and other elements both in terms of lighting and in terms of color and other characteristics.

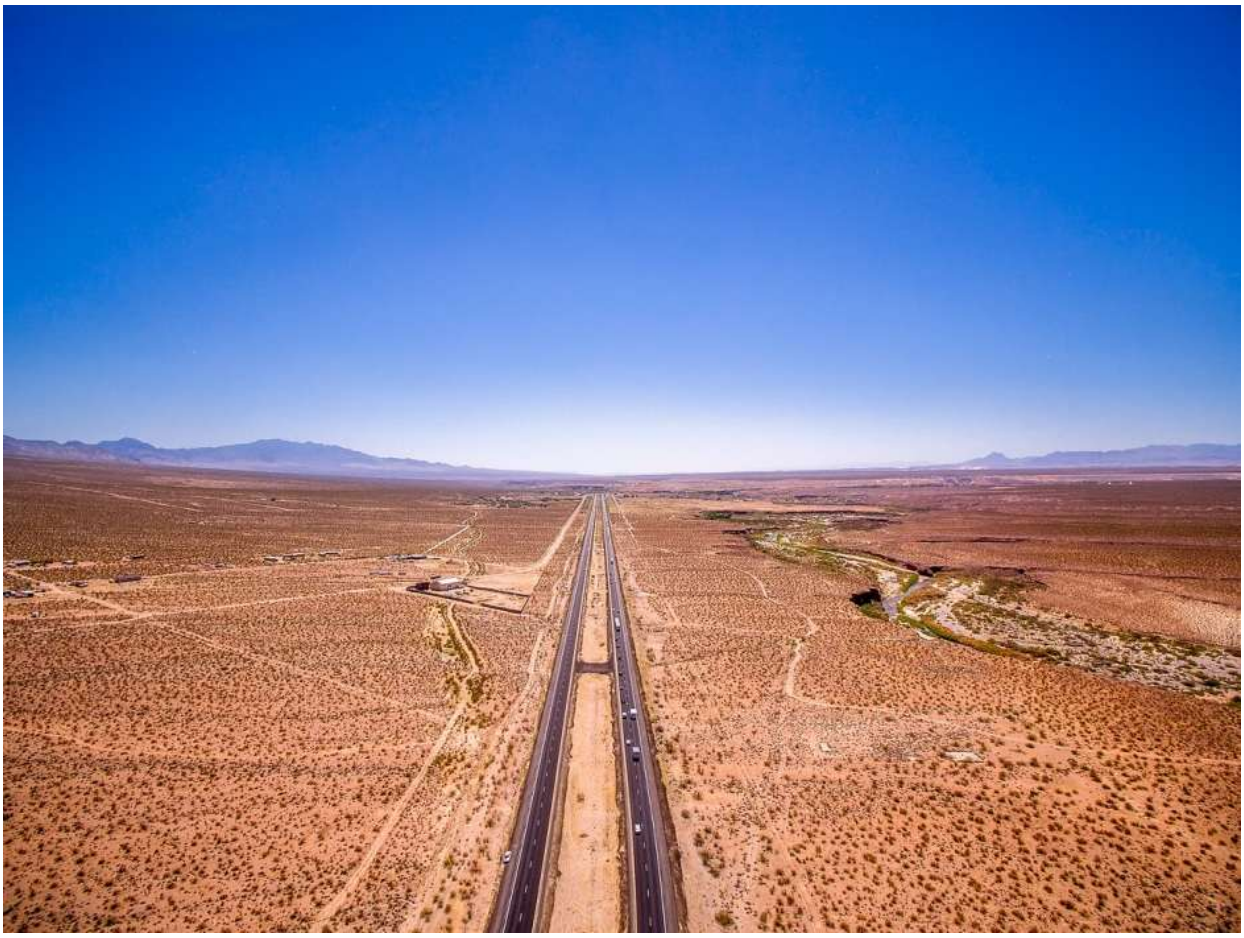
For example, you could shoot a row of buildings from above and completely miss an opportunity to make an amazing composition with the horizon or hills in the background.

Positioning the drone a bit lower and tilting the gimbal angle upwards will enable you to take a shot with better compositions in this case.



Using leading lines

Leading lines are lines or paths that can be used to capture the attention of the viewer and direct it to the object(s). They can be straight, diagonal or wavy. It gives the viewer an illusion of being "Inside" the photo since the eyes are wired to trace along the lines and paths.



With drones, you are able to see leading lines that you would otherwise not be able to. Manipulate the viewer's attention by

using these invisible leading lines that you can only see from above, to specific objects and you can tell a great story with it.

HDR bracketing

HDR Bracketing is a technique used capture photos in a high contrast environment. For example, when there is a sunset in the background of a beautiful town. In this case, it is highly likely that either the town will be near invisible when you expose to capture the background with the sun or the background with the sun will be washed out if you try to make the town visible by exposing for the shadows.

Most of bracketing work is done in the post processing, but knowing how to take shots for bracketing is important to master with any type of photography. With drone photography, it is no different. In fact, it is even more important because most drone cameras do not support a really wide dynamic range as of yet.

The key is to take multiple photos at different exposures and then combine them to contain exposures of all the photos (in the post processing phase) for the final HDR image. You can change the exposure by changing the ISO, shutter speed, using the AEB settings or adding an ND filter.

You should be fine with taking 5-6 images at different exposures. With the AEB settings, your camera will do this for you automatically.

Stepping up drone photography

Panoramas

A panorama is a wide-angle shot of an extensive area. A panorama photo is essentially a series of photos of an entire area (wider than you would normally be able to cover with a single photo) that are then attached together to form a larger image with more details. You could also make a 360 degree panorama!

Of course, the above are just traditional panoramas. With the proper workflow in place and with a little bit of skill and patience, you can create 360 degree panoramas with your drones. These are excellent for real estate photography and advertising so it is worth mastering them.

Most of panorama work is in the post processing. When you head out to take the aerial photos that you will stitch together, there are a few important points you must remember:

Try to get a lot of overlap (about 50 percent or more). This means more photos, but it'll be easier in the post processing and the chances of getting a quality image with no stretches are higher.

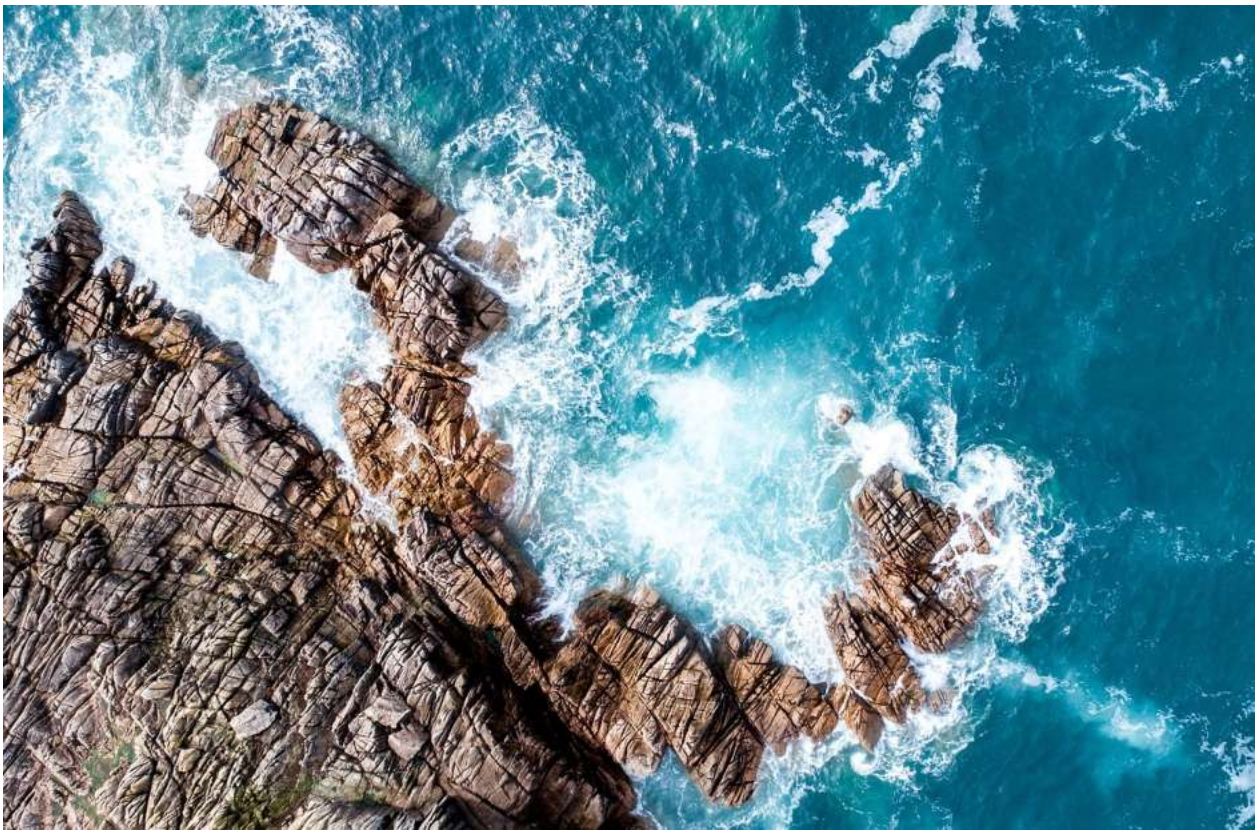
Know the distance: The further away the subject of your panorama, the lesser the amount of images you will need to take.

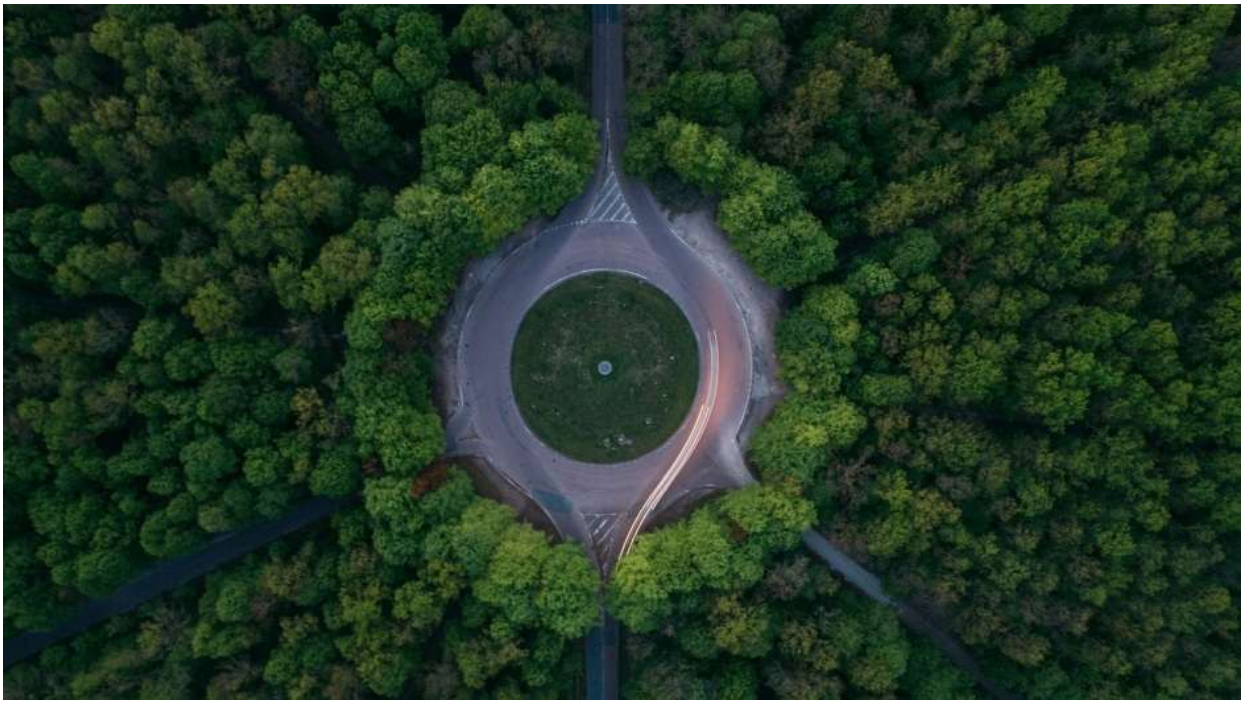
Of course, this means you will get less detail. The more detail you want, the nearer your drone will have to get to the object(s) of your photography and the more shots you will need to take.

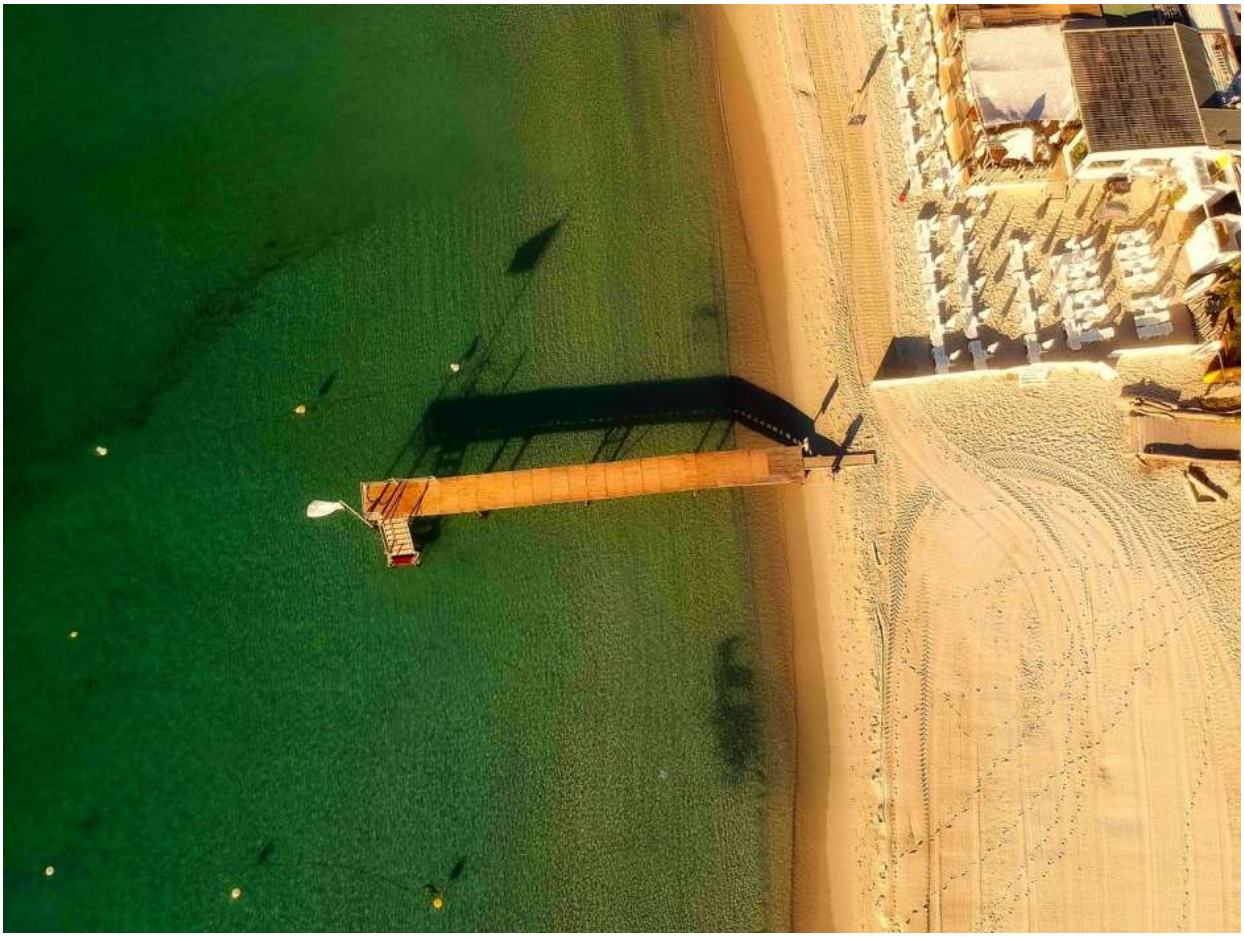
When possible, use the horizon to level the camera for the panorama image. With this technique, it will be easier for you to gauge whether or not the final image will be weirdly merged.

Top down shot

The top down shot is one of the most common forms of aerial photographs that you'd come across. Nevertheless, it is also one of the best shots that you can master and add to your repertoire. The key with top down shots is finding the perfect lighting. If you recollect, we already covered how clear days and afternoons ideal for the top down shot.







Action photo: Burst shot

Ever wondered how to get the best possible shot for an action sport maneuver like a skiing stunt? The answer is the burst shot. Essentially, a burst shot is a quick firing of multiple shots (usually about 5-7 in most drones) that are then loaded onto a buffer. Most camera apps on drones come with this feature.

After you have saved the series of photos that are bracketed, you can then pick the best photo that represents the "stunt" or the action performed by your target. With this, you need not worry about taking the shot at the EXACT moment of the action, which would be a herculean task!

With burst shots, the key is to know when to start and stop the series of shots. Mastering it will of course come with trial, error and experience.

Foundations of taking aerial video

Shooting great aerial videos

Great videos have an underlying "poem" or a "story" theme to it. With aerial videos, just like with aerial photography, it can be compelling to shoot just about anything from a high altitude. This is the wrong approach. This section isn't going to be a long and needless fluff vomiting opinions. Opinions are subjective. A great video for some might be an abomination for others. However, it is worth discussing some important basics you must remember.

The foundations we discussed in the photography (planning, lighting, altitude) section also apply for video. In addition to what we already covered in that section, below is a framework you can apply to get the best possible aerial videos:

1. Planning

First, you must have an idea about what it is you want to portray with your video. Your videos **should have a purpose.** Plan your shots before you let your drone fly.

For example, do you want to get the best possible presentation of a real estate property? If so, you must decide on what angles and

altitudes would stitch together to showcase the best presentation for that property. Fly around and look around, making observations before making the actual shots.

After you have made your observations, you need to setup your flight in order to optimize the direction of travel, visibility and distance. You should also consider the best possible starting point for your drone, including the angle of the camera gimbal to start the shot. The way to get the best possible shots is not to steer mid-flight, but to **make the setup and arrangements pre-flight**.

2. Making the shot

Ideally, each aerial video shot you make would be about 10-20 seconds long. You can then stitch together all the shots in post-production to create the final piece. The longer the individual shots, the more likely it is to end up being boring. Again, each shot should have a definitely purpose and the shorter it is, the easier it is to define that purpose.

Remember to avoid sudden movements during the flight. Each movement you make with your controller should be smooth and slight. When you make the shot, it should be in line with the plan you have already made pre-flight. Mid-flight change of direction and explorations should be left for the planning and observation phase. Only break this rule if you are absolutely sure that it will enhance the shot.

When you end the shot, remember to make it smooth and not sudden. If your planned route for the scene is from point A to point B, end it by letting your drone fly another 5 seconds past point B.

3. Using FPV

Use FPV to guide you throughout the shot. It is near impossible to get the correct shot if you cannot see where the camera and drone is looking and if you cannot make the appropriate controller adjustments during flight.

You could either use a screen mounted on the controller (phones, iPads etc.) or goggles. A screen is more ideal if you are flying a drone without a dual operator mode. With goggles, you lose situational awareness and the ability to accurately tell where your drone is. This can not only be dangerous, but also not ideal for videography.

A dual operator drone like the DJI Inspire facilitates the best possible scenario - One pilot controls the drone while the other controls the camera and gimbal. With this setup in place, the pilot controlling the camera is now free to immerse totally in the FPV stream while the drone pilot maintains visual line of sight. This is where FPV goggles can come in handy.

4. Use static videos

Many drone pilots completely overlook the beauty of static shots. Since we have a transmitter with multiple sticks, our brains are wired to think that drones are always about moving. Sometimes, it is a good idea to let the environment do the job of moving. A static shot from the air can make a great opener, act as a transition or even make a great ending for your final piece.

5. Use freestyle to mix it up

Pre-planned techniques have proven to work and it should make the bulk of your video captures. We'll be covering some of the best drone videography techniques and how to execute them in the next section, but it is worth mentioning that free flying has its place.

Shoot a few free flying clips after you are done with your main shots and you might find a few gold nuggets that you could potentially add in to your final video!

Frame size, frame rate and shutter speed for aerial video

Frame size

If you zoom in on any picture or video, you will notice that they are made up of small blocks. The frame size is the amount of blocks (formally called pixels or picture elements) that make up the picture or video. The higher the frame size, the better the detail.

The frame size used to be at one point, highlighted in terms of vertical resolution. For example 720 * 1280 (720 pixels high and 1280 pixels wide) is "720p" while 1080 * 1920 (1080 pixels high and 1920 pixels wide) is "1080p".

With the advent of UHD (ultra-high definition), the classification was changed to highlight the horizontal resolution instead of vertical. " 4K" or (3840 * 2160) is essentially 2160 pixels high and 3820 pixels wide.

Most professional drone photography and video today are shot at 1080p or 4K. Even though you may have a drone that is capable of shooting at 4k, it is still a good idea to give you clients the option of 1080p shots at lower price points.

Frame rate

The frame rate is the amount of frames or pictures per second. At higher frame rate, the video will be sharper and crisper. However, this doesn't mean that you should always shoot at higher frame rates.

If you are shooting for cinematic purposes, the ideal frame rate is at about 24 fps. Any higher than that and you reduce the motion blur that people love to see while watching a movie.

Higher frame rates (60 fps or more) are usually used for slow motion shots. This is achieved by first taking the shot at a high frame rate and then placing it on a low frame rate (30 fps or below) timeline.

Aperture, Shutter speed, ISO settings and using ND filters

The aperture is the opening that allows the light to pass through and hit the sensor of the camera. The aperture setting determines how much light can enter. The shorter the aperture, the longer the opening needs to be open for the correct exposure. However, if the aperture setting is too high, the opening should be closed quicker.

Most drone cameras however, do not come with this aperture setting. To circumvent this, you can control the shutter speeds. It determines how long the aperture opens. The faster the shutter speed, the faster the aperture closes.

Hence, the shutter speed is what determines the exposure of each frame with most drone cameras. In order to get the smoothest result, you generally want to **aim for a shutter speed that is 2x the frame rate.**

The ISO is the sensitivity setting of the camera sensor. On higher ISO settings, more power is consumed and less light is required by the camera sensor. If it is too high, then the shots will be rendered useless from noise. At low ISO settings, more light is required to clear darkness and get a clear image. This can be done by tweaking the shutter speed or by changing the aperture settings.

Hence, the amount of exposure is a play between aperture, shutter speed and ISO. It is important to get the correct combination to get the most ideal shot.

With most drone cameras, you should set the ISO setting according to the shutter speed, which in turn would be twice the amount of the frame rate that you want to shoot at.

ND Filters

In high sunlight conditions however, it is possible to run into a situation where you will have to set the ISO to its maximum lower limit. Along with this, you may have to turn up the shutter speed to get the correct exposure or else the video may turn out to be unusably bright. With this, you lose the flexibility to shoot at the frame rates you want and still maintain the correct shutter speed setting.

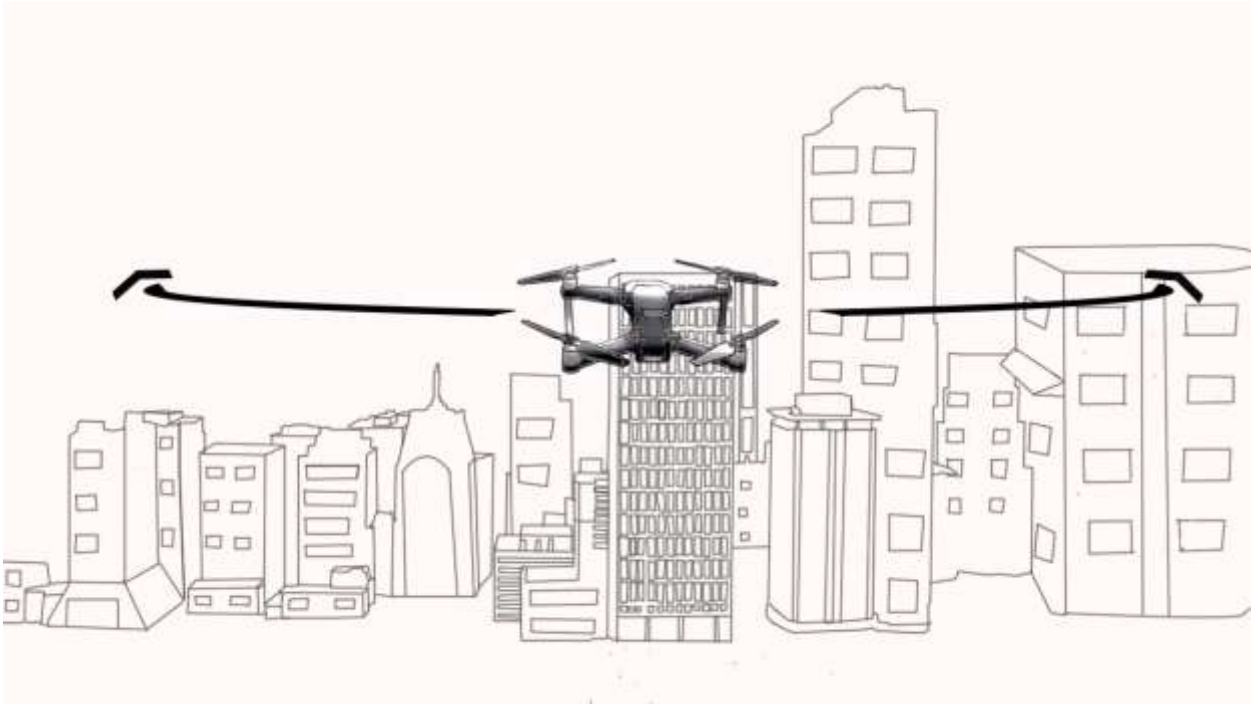
To circumvent this, you can attach an ND filter to your drone camera. Simply put, it will allow your camera to shoot at a slower shutter speeds even during bight sun light, enabling you to work at the appropriate frame rates.

Mastering aerial video techniques

The horizontal and vertical sweeping shot

The "sweep" or the "pan" is the easiest type of shot because it doesn't require the drone to move from one point to the other. You could either do the panning horizontally or vertically.

With the horizontal sweep, you either yaw the drone or move the camera horizontally. The vertical sweep can be done by tilting the gimbal up and down



Horizontal sweeps can be used to show the expanse of a particular area (think of it as a video version of the panorama photography). It could also be used to track an object at it enters the scene and leaves. For example, you could track the movement of a car as it enters the frame of your shot by rotating the camera or yawing.

The vertical sweep can be used to reveal the height of a particular building or a tree or any tall structure. It can also be used in action sports. An example would be in dirt bike racing.

The revealing shot

The reveal is a great opening shot. You can use this shot to introduce the audience to new scenery or to the video clip itself and create a sense of "awe". To pull off a revealing shot, you need to make use of the foreground and the background.

First, you fly low so only the foreground is visible and then slowly climb altitude, revealing the background. The foreground can be anything – a tree, a building or a set of buildings, wall, or even a row of vehicles. The key to making this shot look amazing is to have a nice background. You should also make sure that the climbing of the altitude is smooth and gradual. No jerky movements.

The drive and look-up shot

This shot produces very similar results to the revealing shot. In the drive and look-up shot, the camera is pointed straight down. You fly forwards or backwards and tilt the camera gimbal up, revealing the background.

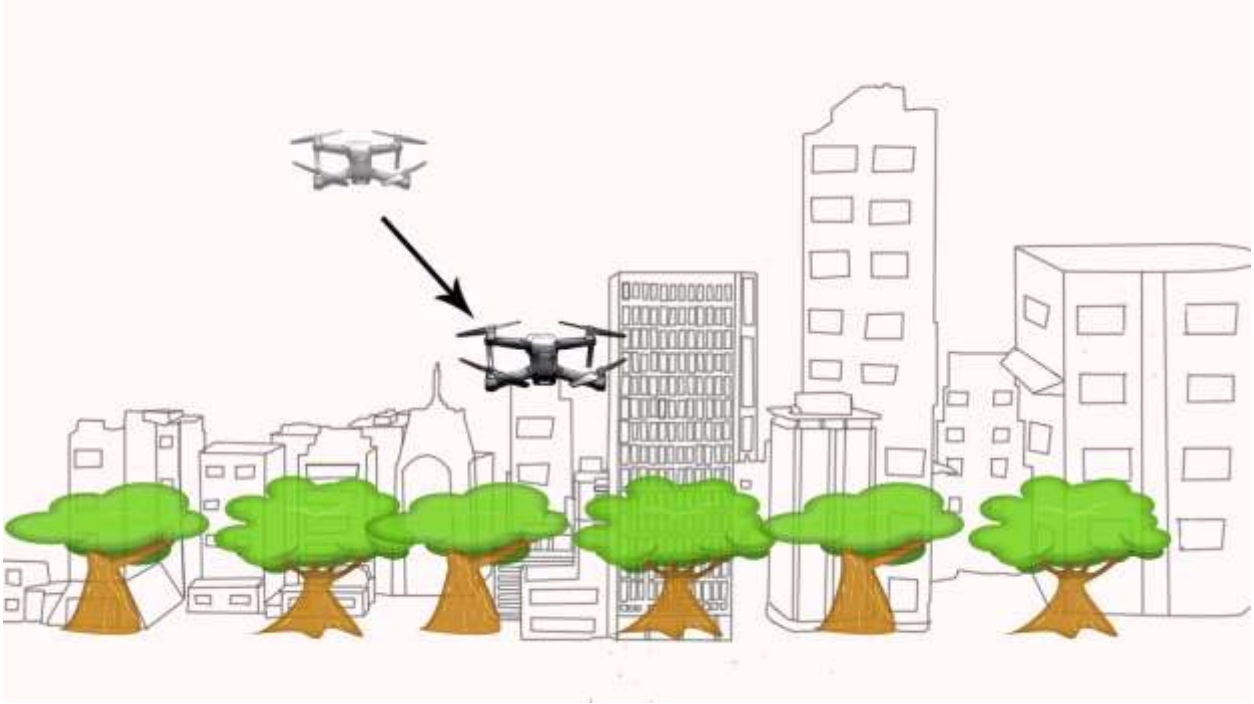
The key difference between the look-up and the reveal shot is that with the reveal shot, a foreground is used to hide the background. Here, the same thing is accomplished by having the camera face down initially.

This shot can also be used to keep a particular object at the center of the frame while flying backwards and tilting the gimbal. Again, the key is to fly the drone slow and to tilt the gimbal gradually.

The backward flying revealing shot

This shot is the direct opposite of the normal revealing shot. Instead of trying to reveal a nice background, we try to reveal a beautiful foreground flying the drone backwards, while first keeping the camera focused at a bland background.

The background here can be anything, but the foreground object(s) should tell a story about the scenery and the location. The backward flight can also be used to reveal a background while first focusing on a foreground, but it is best reserved for the opposite effect.



The key here is to time it so that the scenery that you want to show will be visible in about 3-4 seconds as the drone flies backward, slowly and smoothly

The top-down shot

This is a classic shot with two variations. With the first variation, the drone is made to hover above an interesting object or a set of objects on the ground, camera facing the object(s). You then yaw the drone while simultaneously raising the altitude. Both the yaw and altitude gain should be done very slowly and smoothly.

With the second variation, the drone follows a set path on the ground, camera facing directly down the path. The traveling along the path should be done very slowly.

Elevator or crane shot

The elevator or "crane" shot is achieved by facing the camera at the object(s) of interest, and then raising the altitude of the drone. As the drone climbs up in altitude, the camera is tilted downwards, keeping the object(s) still in the frame.

The fly through shot

This shot is useful to get quick shots of interesting scenes that can be added in to the final video in postproduction. The key to achieving a fly through shot is simple – you simple fly pass object(s) of interest. The tricky part is to make the shot look interesting.

Before you make a fly through shot, it is important to plan your shots just like any other shots. Don't make the mistake of flying through just about anywhere like most people do. Decide what is it that you want to show your audience and try to make it interesting.

Fly in between trees, roof-tops or through interesting places of the real estate that you want to advertise. Plan how the shot will fit into the final piece!

<Pictures here>

Course lock or waypoint shot

This shot is achieved with the course lock or waypoint modes. It is essentially a shot where the camera is set to focus on the object(s) as the drone passes by.

With the course lock mode, the drone's |forward" direction is set to wherever you want to, regardless of the orientation of the nose. With this, you have the ability to rotate the drone and get the camera to face the particular object(s) as you fly by the object(s).

Another way to achieve the same effect is to use the waypoint mode. Set the drone to fly between two points using the waypoint mode. With this, you are now free to control the camera and keep it pointed at the object(s) of interest.

The orbit shot

The orbit shot can be easily achieved by using the POI (point of interest) mode in most drones that you get today. However, if you want to be more flexible and control the way the drone orbits around the object of interest, then you have to go manual.

The key is to point the camera at the object(s) of interest and then move the craft and yaw at the same time. If you have followed and mastered the steps from the drone pilot's manual, this should be a piece of cake for you.

Make sure that the object does not obstruct your radio signal when the drone goes around to the other side. You also need to have visual contact at all times. Fly higher than the object.

The slider shot

With the slider shot, you need a defined background and foreground. The key is to fly really slow and close to the foreground while keeping the background visible. This is what creates the "slider" effect. You could also add more excitement by changing the altitude mid-flight. Make sure that when you do that, there are enough foreground elements to make the movement look interesting and alive.

The key to making this shot is to fly the drone sideways while keeping the camera facing forward.

Chasing moving objects

This is a difficult type of shot to nail down, but can be extremely valuable in making your video clips look absolutely epic.

This type of shot is made by having the drone follow a moving object from behind, front or from the side. The main difficulty in correctly executing this shot is to match the speed of the moving object.

Matching the speed is alright if the moving object has a predictable velocity like steadily moving boats, cars etc. It is a whole another story when you are trying to film an object that is moving with dynamic velocity (think sports events, for example).

Chasing dynamically moving objects and getting the shots nailed down requires fast reflexes and the ability to tell the direction of travel. Matching the speed and direction of the object smoothly, without creating too many jerky movements and adjustments is key.

To make things easier, it is recommended that you shoot at a larger frame size (typically 2.7k or higher) so that you can cover the object more easily, without fear of losing it off the frame. Adjustments can be done in post-production.

Workflow

No discussion on photography and videography would be complete without having covered workflow. Having a process to manage your work can make a world of difference in your overall performance, efficiency and delivery.

Though we shall not cover a specific workflow tactic in this chapter, we'll take a look at what are the main things you must take into account before crafting your own workflow.

There are tons of ideas that you can find online from others but even if you were to imitate their workflow, you need to have an understanding of WHY they are doing what they are doing. Ultimately, it will be up to you to setup your own process that works best for your needs. There is no "one size fits all".

Consistency and scalability

The surest way to mess things up would be to have little or no consistency with your process. It defeats the purpose of having a workflow if you are going to haphazardly change your process every now and then.

With consistency in place, your workflow process will be muscle memory over time. Sure, you can "evolve" your process as your work and budget grows. However, understands that there is a fine line between evolution and reworking.

Hence, it is important to consider scalability. Whatever workflow you design, make sure that it is scalable as your work grows. Manual sorting and searching for pictures and videos you took may be alright when you only have about 100 images. It is a very different story when you have to search, store, manage and backup thousands of pictures every month.

Start building that workflow even if you are only a beginner and you'll have jumped ahead of many frustrations and losses. Prevention is the best cure!

Planning considerations

Here are the main questions you need to be asking yourself when you plan your workflow:

What format are you going to be taking your images and video? If 90% of your images are going to be in RAW format or if you are shooting panoramas and HDR, your post-production will be more intensive and your storage requirements will be much higher. Same thing goes for video. If most of your videos are going to be in 4K, your storage demands, disk and CPU speeds will be much higher than if they are 1080p.

How many memory cards will you need and how are you going to store them? If you are headed to your neighborhood park for a quick photo-shoot, you might not need to carry that many memory cards. However, if you are traveling with your drone to faraway lands to capture the aerial shots of beautiful exotic lands, you might need to carry multiple memory cards. If that is the case, it is a good idea to have a memory card holder. You can get great waterproof memory card holders for as low as $10 off Amazon.

How are you going to transfer your files? Are you going to transfer your files wirelessly? Use a USB? A card reader? The important point to remember is that you have to minimize time and liability here. The most recommended way to transfer your files would be through a card reader. In some computers, this

comes built-in. If yours does not come with a card reader, you shoulder consider buying one.

Where are you going to store your files? How are you going to back up? Sure, you could store everything in your workstation but it is highly unreliable for two reasons – one, the more full your hard drive becomes, the slower your computer is going to get. **Second, you absolutely need to back up your files.** Making backups is going to be the most important step in your workflow, period. Have a setup with two or more redundant hard drives to dump your photos and videos. Using RAID drives would be a good idea because they provide size, redundancy and reliability. Of course, you need to consider your budget and start with a minimal setup but as you scale your work, you can add more to it.

How are you going to structure your folder names and files? Have a plan for naming your folders and files. The worst way to lose time and possibly mess things up is by spending countless hours searching for your photos and videos. You can systematize and catalog your main folders and subfolders by date, location, camera, client name etc. Metadata and keywords can also become extremely important as your work scales. Here, we are talking about GPS coordinates of the location, weather conditions etc. By **using software like Light room** to import, catalog and organize your work, you can save a TON of time and make your workflow efficient.

How are you going to process your images and video? We will cover post processing in the next section but for now, keep in mind that you will need to consider what software you will be using, and the main steps you will be applying to most photos and video (think lens corrections, cropping and noise reductions)

Post processing: Editing pictures and videos

Basics of post processing photos

Post processing is a vast topic and deserves a book on its own. Trying to cover everything here will be pretentious and do no justice. Fortunately, there are tons of material out there (both free and paid) that you can learn from. This is because everything about post processing in land photography applies to aerial photography. The difference only comes if you want to use built-in camera or lens profile in software during editing and the most commonly available cameras on drones are featured in software like Adobe Lightroom.

In this section, our goal is not to take a comprehensive look at post processing, but to get a sense of direction as to what to do with the aerial pictures you take if you are an absolute beginner. You could use a myriad of different software but the most commonly used ones are Lightroom and Photoshop.

Fixing lens distortion

Usually, the first thing you do with your photo is to fix the lens distortion. With Lightroom this is fairly easy, especially if your drone camera profile is already featured. All you have to do is to select develop at the top - > Lens corrections - > Enable profile corrections - > Choose the make (for example, DJI) -> Choose the model.

If your drone camera make or model is not available, apply the lens correction of what you think is the most similar camera make/model.

Color correction

They key to color correction is to know what colors are complimentary and to balance those colors in your photo. You need to have athe ability to spot where the colors are most prominent in your photo.

For example, if you have red dominating the lighter areas and blue dominating the darker areas, you can't just apply a blue filter to the entire photo because even though the highlights will turn neutral, the shadows will turn out to be oversaturated with blue.

Highlights, shadows and exposure

Next, you want to look at places in your photo where the highlights are blown out. This usually happens to brighter areas of objects and the sky, More often than not, highlights are reduced in post processing to recover detail from blown out areas than the other way around.

On the flipside, look at places in your photos where recovery is needed from darkness. This is where adjusting shadows come in into play. Move up the shadow slider to recover details that are lost into darkness.

Finally, check if your photo needs an overall brightness boost or reduction. Sometimes, this might be your first step before adjusting the highlights and shadows (if your image is either too bright or dark).

Clarity and vibrance

The Clarity setting is typically used to boost midtone contrast. The key is to know if the differences between the light and darkness in your photo need to be more visible. Moving up the clarity will improve this, thereby making things more "real" and detailed.

The vibrance setting looks at the areas in your photo with less color and tries to "match" it with the areas with more color. This is a useful slider because it allows you add color without making the rest of the image look funky.

Fixing noise

Noise usually occurs if you are shooting in low light conditions or if your ISO setting is turned up too high. Remember that there are two types of noise: color and luminosity. If there are unnatural colors in the grains in your images, that is a color noise. The luminosity noise is the grains itself.

Play around with the color and luminosity noise setting until the grains and unnatural colors on them are gone. You might want to work zoomed in. Note that you might not be able to completely get rid of them, but the important thing is to make your image look free of noise when you zoom out to 100%.

Chromatic aberrations

Visible light contains different wavelengths, represented as different colors to both our eyes and the camera sensor. It is a problem that occurs when the lens is unable to converge all the wavelengths to the same focal plane. The end result is that the image can look blurred or you may find colored edger or halos around the objects in the photo. Removing chromatic aberrations is fairly easy with software such as Lightroom and can drastically improve the quality of your photo.

Advanced post processing and where to go from here

After you have "fixed" your photo, the next step will be to apply advanced post processing techniques to make it look even more amazing. We will not be covering all of it here, but here are a few things you might want to do with your photo:

Sharpening

Creating HDR images

Masking with Photoshop

Creating HDR panoramas

Adding special effects

Post processing videos

Like photography, everything about post processing aerial videos works similarly to any video. There are volumes and volumes of information out there on video post-production and coverage of it is outside the scope of this book. We will, however look at where you should go from here and what you should look for.

Software

Without the best software for video post processing, you are going to get nowhere today especially since aerial videos are no longer

novel. Fortunately, there are a lot of options out there and here are some of them. Get your hands on them (if you haven't already) and learn how to use them.

Paid options (recommended for best work):

Final Cut pro X (most recommended for mac users)

Adobe Premier Pro **(most popular and recommended)**

Avid media compressor

Sony Vegas

Free options (recommended if you are strapped for cash):

iMovie

HitFilm

DaVinci Resolve

Lightworks

GoPro studio

DJI Go app

General guidelines

Here are some of the most important tips for video post processing:

- Learn how to remove excess clips: This is usually the hardest part for most of us. After all, most shots we take will be dear to us. In most cases however, you WILL have to cut out clips and trim down to the best ones. The biggest mistake you can make with post processing video is to try to include everything.
- Tell a story: Following up from the previous point, you must try to pick clips that string together to tell a story. When we say "story", we mean that the final video should have a definite purpose. The key is to show the viewer the point you are trying to make with your final video. Taking the right shots and then sequencing your clips in the right order have to be planned right from the very beginning
- Vary the shots: When you pick the clips to be included your final video, make sure that there is enough variety. Your viewers would get bored if you use clips with the same type of shots. Variety is not only the spice of life, but a key ingredient in making your final video amazing.
- Try to keep each clip short: Each clip that you string together in your video should be short. If you feel like a particular clip has to be included in your final video and it is too long, cut it short. Again "too long" can be anywhere from 10-15 seconds.

The goldilocks zone for clip length is usually around 5 – 7 seconds. Shorter clips are fine, but any longer than 5 to 7 seconds and you might enter into boredom zone. This is just a general guideline; you must experiment to know what works best in your particular scenario.

- Music: Pick music that will resonate with your audience and also that is contextual. One of the biggest mistakes people make is to pick music that they like and ignore context. You do not want to add dubstep music to slow video demonstrating beautiful landscapes.
- One of the best ways get inspiration, learn and improve in any art is to watch a master. This holds true even for videography and cinematic drone shots. Watch how the clips are strung together seamlessly to tell a story. Watch how music is used to give life to the video.

In closing

Learning and mastering drone photography and videography is no easy task. It is strongly recommended that you learn how to fly your drone skillfully before venturing into photography and videography. Not only will this help you take better shots, it will also reduce the chances that you will crash into something and make a terrible mistake.

Go pick up the Drone Pilot's Manual and master flying a multirotor using the tried and true, step-by-step methodology laid out in the book if you haven't already!

Everything else is post-processing and having the knowledge of how to use the appropriate software.