

## PHOTHOGRAPHY

painting with light

### Preface

We are delighted to present this book, which serves as an Photography Painting With Light. The content within these pages aims to provide a comprehensive introduction to the basics of photography. It covers everything from the main point in photography to the technical aspects of taking great photos. Whether you are just starting out or looking to improve your skills, this book will give you the tools you need to take stunning photographs.

Throughout this book, you will learn about the different types of cameras, lenses, and accessories that are available, as well as the technical aspects of exposure, shutter speed, and aperture. You will also learn about composition techniques, such as symmetry and asymmetry, that can help you create visually stunning images.

In addition to technical skills, this book also covers the artistic side of photography. You will learn about the importance of light, colour, and texture in creating compelling images. You will also learn about different genres of photography, such as landscape, portrait, and street photography.

May this book become a source of sustained benefit to all who delve into its contents. Our hope is that it leaves a positive impact, contributing to the enrichment of knowledge in the photography, thank you sincerely for dedicating your time and attention to this exploration.

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### INTRODUCTION

The enhancement of digital photography has brought about a significant change in the methods of capturing images. As a result, it is now much more straightforward to shoot high-standard-quality photographs than directly publish them through online platforms. It is necessary to have a solid understanding of the fundamentals of photography. Still, if one wishes to master the art of digital photography fully, one will need to delve further into expanding their knowledge and expertise even more. This book will provide the information and skills necessary to take your photography knowledge to the next level, laying the groundwork for digital photography and preparing the foundations for its use. From fundamental camera settings to composition and lighting, you will get the information and abilities needed to take your photography to the next level.

### **IMAGE** SENSOR

The image sensor is the most essential component of a digital camera since it is the one that is responsible for transforming the captured light into a digital picture. The sensor is composed of millions of very small pixels, each responsible for recording the quantity of light that falls on it. CCD, which stands for charge-coupled device, and CMOS, which stands for complementary metal-oxide-semiconductor, are the two sensors most often used in digital cameras. CCD sensors are well-known for producing high-quality pictures with little noise.



Picture 1: Image sensor



However, CMOS sensors are known for their greater power efficiency and outstanding suitability for capturing video. Image quality is also heavily influenced by the size of the sensor; typically, higher-resolution photographs are produced by sensors with a more extensive surface area.

### **IMAGE** SENSOR

Image sensors are available in a variety of different sizes nowadays. The standard size of the image sensor that is typically used everywhere is 35mm. The field of vision that may be attained with a given focal length lens is significantly reduced because the image sensors used in many digital cameras are much smaller than the picture area of full-frame 35 mm cameras, which measures 24 mm by 36 mm.



Picture 2 : CCD Image sensor

It is common practice to specify the size of the sensor using the optical format in inches. In addition, a few more metrics are used; for a summary of the sensor types and sizes, see below.



Picture 3 : CMOS Image sensor

### DIGITAL CAMERA BODY DSLR

The Digital Single Lens Reflex (DSLR) and mirrorless cameras are two varieties of digital cameras that are distinguishable from one another in terms of their construction and their capabilities. Both types of cameras have positive and negative technical aspects. Thus, selecting one depends on the photographer's requirements and preferences.

DSLR cameras have been around for quite some time, and they continue to be widely used by serious photographers today. Mirrors and prisms in the camera's optical viewfinder let the photographer see the subject while the photo is taken. DSLR cameras' bigger bodies also allow for a more secure hold and more stable imaging when employing longer lenses. Picture of Image sensor on DSLR body and prism mirror inside DSLR body.

DSLR cameras come in two sensor sizes: full frame and crop sensor. Full frame sensors the same size as conventional 35mm film provide a more expansive shooting perspective and superior sensitivity in dim lighting. Crop sensor cameras' smaller sensors mean they can only capture a smaller portion of the scene and are less sensitive to light overall. Full-frame cameras are more expensive than crop sensor cameras.

Picture 4 : a bulky DSLR camera

### MIRRORLESS



Picture 5 : DSLR diagram

Picture 6 : Mirrorless diagram

In contrast, mirrorless cameras do not use a prism or mirror inside the camera. They do this by looking at the image on the camera's LCD screen or electronic viewfinder. This design makes the camera's Compact and lightweight body possible, making it ideal for taking on trips or professional use. Mirrorless cameras, like DSLRs, are available with a full frame or crop sensor. Crop sensor mirrorless cameras are a more portable and inexpensive alternative to full-frame mirrorless cameras, whereas full-frame mirrorless cameras offer the same advantages as full-frame DSLRs.

# In conclusion, whether a photographer chooses a DSLR or a mirrorless camera depends on his or her demands and interests.

Crop sensors are more compact and cost-effective, whereas full-frame sensors excel in low-light conditions and give a larger field of vision.

The camera and sensor size should be chosen based on the individual photographer's preferences and intended uses.

### WHAT IS APERTURE, SHUTTER ISO

### APERTURE

In digital photography, the primary aspects determining exposure are the camera's aperture, shutter speed, and ISO settings. To create photos with suitable exposure, it is necessary to have a solid understanding of how these three components interact with one another. The term "aperture" refers to the size and location of the opening in the lens that allows light to enter the camera.

It is expressed as a number of f-stops, where a lower number indicates a wider aperture (larger opening) and a higher number expresses a tighter aperture (smaller opening).

When the aperture is wider, more light can enter the camera, resulting in a shallow depth of field.

Conversely, less light can enter the camera when the aperture is narrower, resulting in a deep depth of field.



Picture 6 : Deep DOF



Picture 6 : Shallow DOF



### SHUTTER SPEED

The term "shutter speed" refers to the time the camera's shutter is open, which allows light to reach the sensor within the camera.

It is measured in seconds or fractions of a second, with quicker shutter speeds enabling less light to enter the camera and slower shutter speeds allowing more light to enter.



Picture 8 : fast shutter speed effect on photo



A slower shutter speed provides motion blur and may be creatively utilized to depict movement. In contrast, a higher shutter speed prevents motion from being captured in an image and lowers the amount of blur captured in an image.

Picture 9 : slow shutter speed effect on photo



### WHAT IS **ISO**



ISO is a measurement of how sensitive the camera is to light. A lower ISO number indicates a lesser level of sensitivity. In contrast, a higher ISO value indicates a greater level of sensitivity—this quality of image sensitivity on a scale that ranges from low to high. A higher ISO enables quicker shutter speeds and smaller apertures to be used in low-light conditions; however, this comes at the expense of additional digital noise or grain being introduced into the picture.



Picture 10 : high iso image sample

visible noise



Picture 11 : ISO diagram

These three aspects, taken together, decide whether or not a picture is exposed correctly. The key to producing well-exposed photographs that capture the subject matter faithfully is to balance the aperture, the shutter speed, and the ISO.

### TRIANGLE EXPOSURE

The exposure triangle is a concept in digital photography that describes the link between aperture, shutter speed, and ISO and how they work together to make a well-exposed picture.

The idea was developed to help photographers understand how aperture, shutter speed, and ISO work together to create a well-exposed image.





Interdependence among the three components of the exposure triangle means that modifying any of them will affect the other two.

### **EXPOSURE** TRIANGLE

Changing the size of the aperture in the lens also changes how much light gets into the camera. It is measured in f-stops, where a smaller number means a bigger opening and a larger number means a smaller aperture opening. A larger aperture lets more light into the camera and makes the depth of field short, while a smaller aperture lets less light in, making the depth of field deeper.

The shutter speed controls how long the shutter is open, which lets light reach the sensor. It is measured in seconds or parts of a second. A faster shutter speed stops motion and lowers fuzz in a picture, while a slower shutter speed blurs motion and can be used artistically to show movement. ISO changes how sensitive the camera is to light. It is measured from low to high, with lower ISO values meaning less sensitivity and higher ISO values meaning more sensitivity. In low-light settings, a higher ISO lets you use faster camera speeds and smaller apertures, but it also adds more digital noise or grain to the picture.

Photographers must change these three things based on how much light is available and what effect they want to create. For example, when taking in low light, a shooter may need to raise the ISO or open the lens to let in more light. You may also need to change the camera shutter speed to avoid overexposure.

In short, shooters must understand the exposure triangle to take well-exposed pictures. By finding the right balance between aperture, shutter speed, and ISO, shooters can control how much light gets into the camera and get the desired image.

### FOCAL LENGTH

In photography, focal length is the distance between the lens and the image sensor or film when the subject is focused. The lens's angle of view and magnification are determined by its mm measurement.

Focal length affects perspective composition. Visual effects and perspectives vary with focus length.

#### Focal Length and angle of



#### Picture 13 : Focal Length diagram

#### f view

L



### LENS LENGTH

#### Wide-angle lenses (10mm–35mm)

capture more of the scene. They are utilised for landscape photography and framing scenes with extra aspects. Wide-angle lenses increase spatial depth, making foreground things bigger and background objects smaller. They also generate distance and space, especially with leading lines or a low camera angle.

#### Prime lenses

have a fixed focal length that cannot be changed and do not have a zoom function. They are recognised for creating photographs of high-quality images with sharp details and low distortion.

#### Kit lenses

These lenses commonly come included with buying digital detachable cameras. They have a variable focal length, typically ranging from wide-angle to short telephoto, with a standard aperture range and usually have an essential functionality for buying the camera. They are adaptable and may be used for various basic photographic styles and applications.

#### Zoom lenses (200 above)

are distinguished by their changeable focal length, which enables the user to zoom in or out of a scene by a corresponding amount. They are widely used because of the ease and versatility they provide to photographers, enabling them to take pictures of a diverse In conclusion, focal length is a crucial aspect of perspective composition in photography. By choosing the appropriate focal length, photographers can manipulate the angle of view, magnification, and distortion to create the desired visual impact and perspective in their images.

It is important to note that focal length alone does not determine perspective. Perspective is influenced by the photographer's distance from the subject and the relative distances between different elements within the frame. However, focal length does affect how these elements are captured and perceived in the final image.

### WHAT IS COMPOSITION

Composition is crucial to photography's aesthetics and impact. A well-composed photograph may convey a narrative, evoke powerful emotions, and capture attention. Several compositional tactics in photography achieve this.

#### **Rule of third**

is a popular compositional technique. The image is divided into nine areas, three across and three down. After positioning the photo's subject along a line or junction, the final output is more harmonic and appealing.

Using two horizontal and two vertical lines, as recommended by the rule of thirds, you may divide the frame into nine relatively equal sections. The objective is to avoid centralizing the action and arrange important pieces along these lines or at their intersections a more aesthetically pleasing and well-balanced composition results from doing so.



Picture 14 : Rule of third

By not putting the subject in the center of the frame, the rule of thirds ensures that the image is well-balanced and harmonious. Off-center compositions provide greater visual energy and appeal. It also invites the viewer's gaze to travel all over the picture, discovering new facets of the scenario as it does so.

### WHAT IS COMPOSITION

#### Balance

"balance" describes the even distribution of elements inside a photograph. Both symmetrical and asymmetrical groupings of parts can produce aesthetically pleasing results.

When the visual emphasis is shared equally between the foreground and background, we get a sensation of **symmetrical** equilibrium.On the other hand, **asymmetrical** balance is achieved by placing parts such that they appear balanced even when their visual weight is not.



Picture 15 : sample asymmetrical bal



Picture 16 : sample symmetrical balar



ance





Picture 17 : sample asymmetrical balance

Symmetrical balance draws the viewer's attention in the center of a picture, while maintaining the same range of image with clean to the both side in the image that produce. To achieve this image, the arrangement of the element in the image will form a strong axis, and harmony in photo. Normally the image that has the ability to produce symmetrical composition is architecture building.

While asymmetrical photos were images that have the same element of the subject with unbalance of the structural arrangement subject or object in the image, they contain two elements with distinct difference image that not exactly create a split mirror axis. In other words,

nce

Picture 18 : sample symmetrical balance

## WHAT IS COMPOSITION

### Leading lines

Photographic lines that direct the viewer's attention to a topic. They might be straight or curved, like roads, fences, or architecture. Photographers use leading lines to provide depth and highlight the subject.



Picture 19 : sample Leading lines

### Framing

Scene components frame the main subject. This can be done by firing through doors, windows, arches, or trees or branches. Framework offers depth and context to the composition and highlights the topic. The photographer's angle of view substantially affects the image's perspective. Low-angle photography makes items look bigger and more imposing, whereas high-angle photography makes them appear smaller and less substantial.

Different angles may provide interesting views and visuals. Focus lengths affect perspective composition with wide-angle and telephoto lenses. Wide-angle lenses (usually below 35mm) reduce objects and increase depth. Telephoto lenses (above 70mm) compress the scene and bring objects closer..

#### Perspective

composition may be affected by depth of field. Utilizing a wide aperture blurs the background to isolate the subject and create a feeling of depth. With a small aperture, a deep depth of field may retain most or all features in focus, adding context and depth to the picture.

Same goes to the vanishing point, is where parallel lines converge in the picture. It creates depth and draws attention to a specific location in compositions with leading lines like highways or railway tracks. By incorporating items in the front, middle ground, and background, photographers may create a layered effect that gives depth and character to an image. Changing focus lengths or subject distances can accomplish this.



Picture 20 : sample Framing



Picture 21: sample Perspective

## WHAT IS COMPOSITION

Photographers may produce aesthetically appealing photos with depth, dimension, and spatial relationships by knowing and using perspective composition. In conclusion, composition is the skill of organizing a photograph's pieces to create an aesthetically beautiful and emotionally impactful image.

Photographers use compositional techniques like the rule of thirds, leading lines, and symmetry to convey messages, evoke emotion, and grab attention.





### LIGHTING

impacts everything light source in А photography, including the character. separation, colors, textures, mood and the story of the photo. When it comes to photography, the type of lighting is the most crucial element in the composition of any image.

Light in photography refers to how the light source, natural or artificial, relates to the subject.

The position and quality of light can affect any number of things in the final image, from clarity to tone, emotion, and so much more, by paying attention to how light plays off the angles and curves of your subject and which parts of the subject are illuminated and which are in darkness.



## **Different Types** of Lighting

There are two main sources of light, natural and artificial light. **Natural light** occurs without human intervention. It can be the direct light of the sun on a bright day, the diffused light created by a cloudy or foggy day or even the moon's light at night. On the other side of things, **artificial light** can often be moved around and adjusted to fit your situation. It is easier to position artificial light on the subject than with natural lighting, where a photographer must move the subject and camera according to their desired lighting technique. Artificial and natural lighting can be manipulated to create any lighting style as long as the photographers know how to use the lighting. Natural Light In natural light photography, it is crucial to understand the sun's angle and how that will affect the composition. For example, the sun is directly overhead for most of the day so the subject will be lit from above. A sunny day without clouds will result in more intense shadows, whilst a sky full of clouds will diffuse the sunlight so that the contrast of light on your subject is less harsh.

For softer natural lighting, use the hours closest to sunrise and sunset, when the sun will be off to a slight angle as opposed to directly above your subject, and the sun's brightness may be less extreme. These times of the day are when professional landscape photographers most like to shoot.

## **Different Types** of Lighting

### Front light

Front light occurs when the light source is directly before the subject. Since the light is not at an angle, this can result in limited shadows. The light will be spread evenly across the photo, with no section more or less exposed than the rest.

### Flat light

Flat light can be good for portraits. However, if you attempt to create a portrait that shows much personality, front lighting will not provide the detail needed to bring the subject's character to life.

Another benefit of using front lighting is if the photographer is exploring symmetry photography, as the lack of shadows helps to make both sides of the face appear more symmetrical.

### Backlight

Backlight photos are when the light source is behind the subject, with the subject in between the light and the camera. This can be an excellent opportunity to play with silhouettes and long shadows in photography. The potential downside to backlight photos is that the white balance will be off, resulting in a loss of detail in the subject. This works well for silhouettes, but if you still want to see some detail on the subject, this is the time to pull out your light diffuser to reflect some of the light from the background onto the front of the subject.

### Softlight

Soft lighting occurs when the light source is diffused, so the effect is more subtle than it would be with a direct light source. By using soft light, they will end up with less intense shadows, if any at all and a lower contrast between the darks and lights in the photo. If working in a photography studio, the photographer can use a diffusion panel between the light source and the subject. If shooting outside, soft light will occur naturally on an overcast day, as the clouds in the sky diffuse the direct light from the sun.

### Rimlight

Rim light can be created using a form of backlighting, where the light is at an angle from behind or above. The light will hit the subject in a way that creates a glowing outline or highlight around the subject, depending on the direction that the light is coming from. This technique helps distinguish the subject from the background by providing a definition. Position the light source above and behind the subject and adjust until the light rim appears. A higher contrast will bring out the rim light, while a low contrast dulls the overall effect.

### Hardlight

Hard lighting is the opposite of soft or diffused light when the light source is pointed directly at the subject. It results in high contrast, intensity, bright whites, and dark shadow and is often created using the midday sun. Photographers can also manufacture this type of light in a studio using a spotlight or other source of light that is not diffused.

## **Different Types** of Lighting

### Split lighting

When the light hits the subject at a 90-degree angle, that is called split lighting. This results in a straight line down the subject's centre, with one side entirely lit and the other completely in shadow. This is an excellent option for a dramatic portrait, mainly if you use a hard light instead of a soft one.

## **Different Types** of Lighting

#### **Three point lighting**

Three-point lighting is a standard method used in visual media, such as still photography, video, and 3D computer graphics. The three types of lights are key light, fill light, and backlight. Key light is the primary and brightest light source in the three-point lighting setup. It gives a scene its overall exposure.

Photographers typically position this leading light slightly off to the side of the camera and the front of the subject on a light stand at a 45-degree angle to the camera, which creates shadows on the opposite side of the subject's face, giving it dimension and depth.

The primary light creates the mood of a scene. Depending upon its position and the supplemental lights used in the overall lighting, it can create a high-key image (evenly, softly lit and atmospherically upbeat) or a low-key image (high contrasts, deep shadows, and very moody).

## **Different Types** of Lighting



Picture 22: key light



Picture 23 : fill light



Picture 24 : backlight



Picture 25 : key light + fill light + backglight

## **Different Types** of Lighting

Fill light mirrors the key light on the opposite side of the camera. The fill light fills in the key light's shadows on a subject, bringing out details in the darkness.

Typically, this secondary light is less bright than the key, and cinematographers control the overall feel of their shots based on how much they dim or lighten the fill light. mood of a scene.

third light is backlight, which used to create a depth and contrast between subject and background. A dim fill light, where the fill ratio is high, creates a high-contrast, film-noir type of shadow, while a brighter light with a lower, more balanced ratio gives the subject a more even look.

The second light is not always a light: it can be a reflector, a bounce card, a wall, or anything that bounces back some light onto the subject to fill in the shadows. Together with the key light, the fill light determines the mood of a scene.

#### 

### Activity

1. To understand what different shutter speeds mean and how to apply them to their own photography within a creative view.

In this activity, you are going to create movement and stop movement by learning how to change their shutter speeds to create the perfect image of Shutter Speed.

By using DSLR, manual mode, capture 5 photo each of the component:

a) Slow shutter/Panning b) Fast shutter 2. Next to understand what different Aperture mean and how to apply them to their own photography within a creative view.

in this activity, you are going to create Depth of field by learning how to change their aperture to create the perfect image.

By using DSLR, manual mode, capture 5 photo each of the component:

a) Shallow depth of fieldb) Large depth of field

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