MODULE 3

Use camera to record images

Understand your camera.

How Camera works.

Other basic Camera settings.

Understand your camera

- A camera is a hardware device that takes photographs, and consists of a lightproof box with photosensitive film or plate within the box. When a picture is taken, the camera's shutter opens and closes, exposing the photosensitive film with light recording the image onto the film.

Main parts of camera

1. The body ; is the housing for your camera. While it has little effect on the quality of your photos, it does affect things like ease of use and comfort.

2. The lens ;

is the eye of the camera, and it's a very complex instrument. Different lenses can provide many different features, so it's important to know the differences between them. Certain types of lenses are better for certain situations, so it's important to know their classifications and differences.

Other parts of camera

- **The Sensor ;**
- is basically the digital equivalent of film, in the sense that—like film—the sensor is exposed to light that comes through the lens and it records that exposure. The exposure is then processed and saved to flash memory (generally an SD or Compact Flash card). The caliber and size of the sensor are also very important, as these things significantly impact the quality of your photos.

- **The Card;**
- is where you save your images, and it's a component most people don't think about too much when buying a camera, aside from choosing an amount of storage that suits their needs. Flash cards range in read and write speeds as well, however, and slow cards can significantly degrade your camera's performance. We'll take a look at what card classes mean and the minimum speed you need for different purposes.

Cont…

- **The Battery**
- matters in a camera just like any other electronic device. While this is a simple part to understand, we'll dive into it a little more deeply to figure out actual, practical battery life for cameras and when cameras with less-powerful batteries may be a better option.

1. The body

- Camera body design affects the user in a couple of ways. First, the size of the body can have a major impact on comfort when being held and used. Small hands will have difficulty with large bodies and, conversely, large hands will have difficulty with small bodies. Before purchasing a camera, it's a good idea to hold it and take a few pictures so you know if you'll find it comfortable to use with regularity.

The body

2. Lens

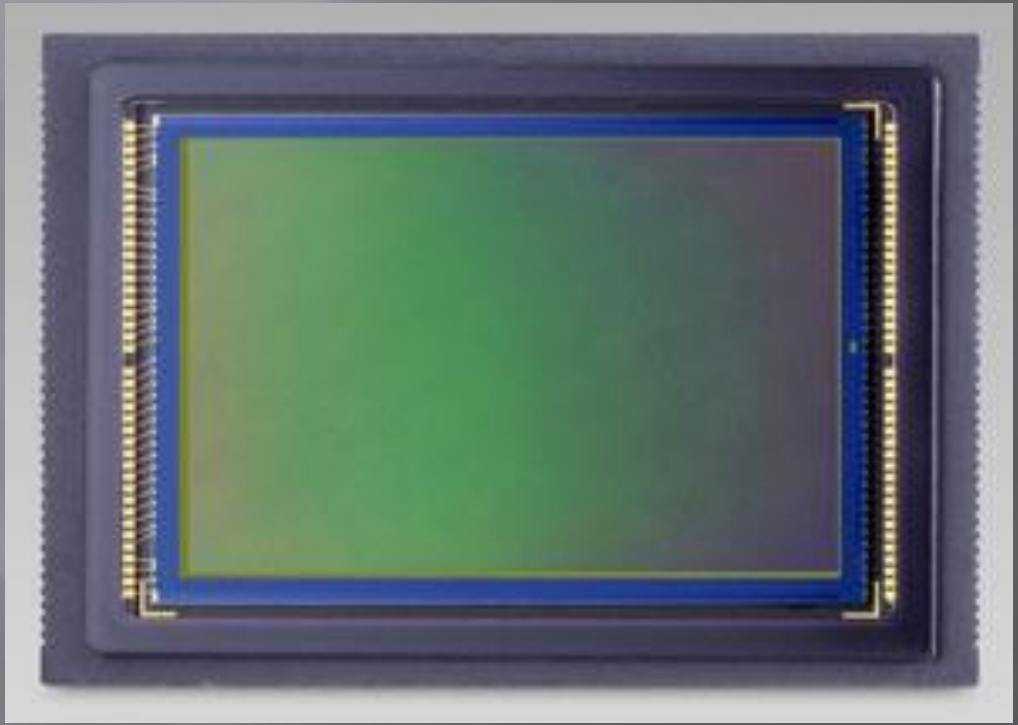
- . The truth is, lenses are expensive, so we often choose a type of photography and then pick a few lenses that work with our vision. It can be useful to try different types of camera lenses for different perspectives and composition

Lens

The sensor and CPU

- The sensor is the part of your camera that captures the light exposure filtered through the lens. For our intents and purposes, we're just going to call this the image. The way the sensor was produced and how large or small it is, has a pretty big effect on the end result: your photograph.

The Sensor and CPU



How camera works

NOTE: GREAT PHOTO ARE MADE NOT TAKEN

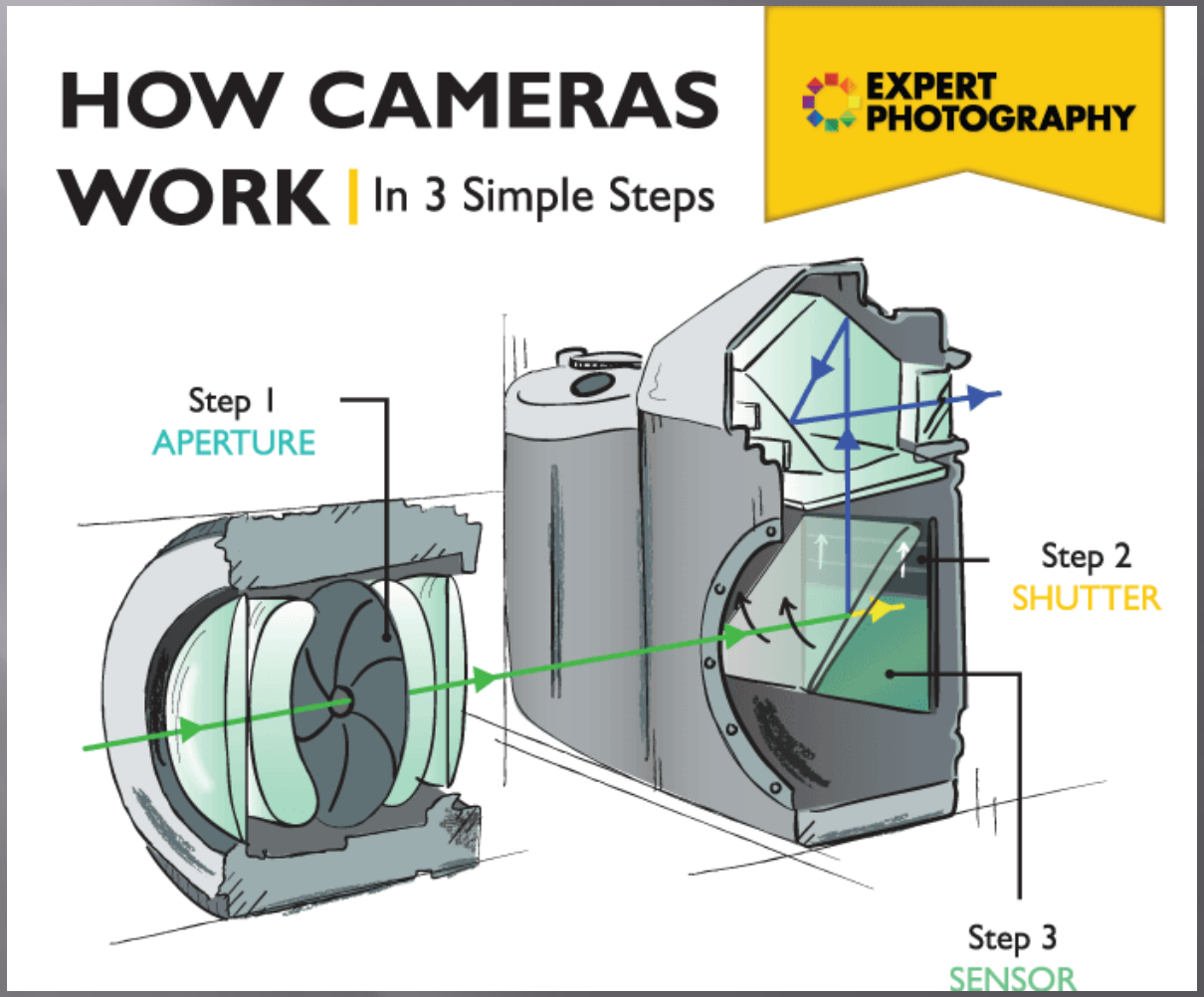
(You set your camera in the way you want to communicate through your picture)

How camera works

Camera basically works with light. And light used by the camera controlled by three things

- Aperture
- Shutter speed
- Sensor/Film (ISO).

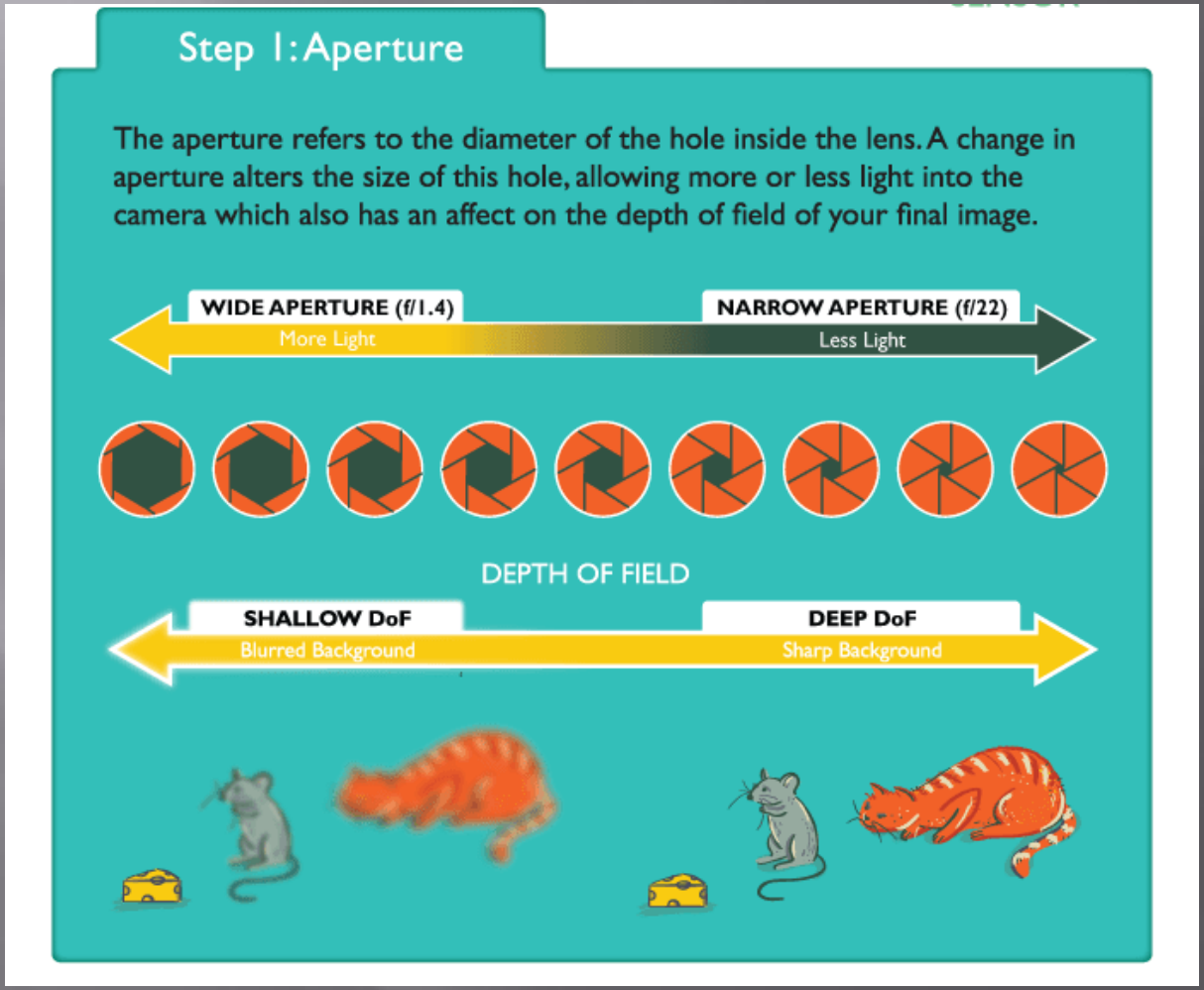
How Camera works



Aperture

- Exposure (LIGHT) happens in three steps, starting with the aperture. This is the hole inside the lens, through which the light passes. It's similar to the pupil of your eye: the wider the aperture, the more light is allowed in and vice versa.
- As the aperture widens, the f/number gets lower and more light is allowed into the camera. This is great for low light but be aware that it's going to make the depth of field very shallow – not ideal when taking landscapes..
- Exposure will be much easier if you can memorize the f/stop scale. **The scale is as follows: f/1.4, f/2, f/2.8, f/4, f/5.6, f/8, f/11, f/16, f/22.**

Cont…


Step 1: Aperture
The aperture refers to the diameter of the hole inside the lens. A change in aperture alters the size of this hole, allowing more or less light into the camera which also has an affect on the depth of field of your final image.
WIDE APERTURE (f/1.4)
More Light
NARROW APERTURE (f/22)
Less Light
DEPTH OF FIELD
SHALLOW DoF
Blurred Background
DEEP DoF
Sharp Background

Shutter Speed

- Once the light has passed through the aperture of the lens, it reaches the shutter. Now you need to decide how much of that light you're going to allow into the camera. Ordinarily, you only want a very small fraction of a second (for example 1/250) to prevent motion blur. However, different shutter speeds complement different situations.
- Anything from really fast (1/4000) for sports photography to really slow (30 seconds) for night photography. It all depends on what you're shooting and how much light you have available to you. **Knowing how your shutter speed works is a key element in the basics of photography**.

Cont…

Step 2: Shutter Speed

The mirror flips up and the shutter opens, recording the light present onto the sensor (or film). The speed at which this happens determines the exposure length as well as the amount of motion blur.

1 | 1/2 | 1/4 | 1/8 | 1/15 | 1/ 30 | 1/60 | 1/125 | 1/250 | 1/500 | 1/1000

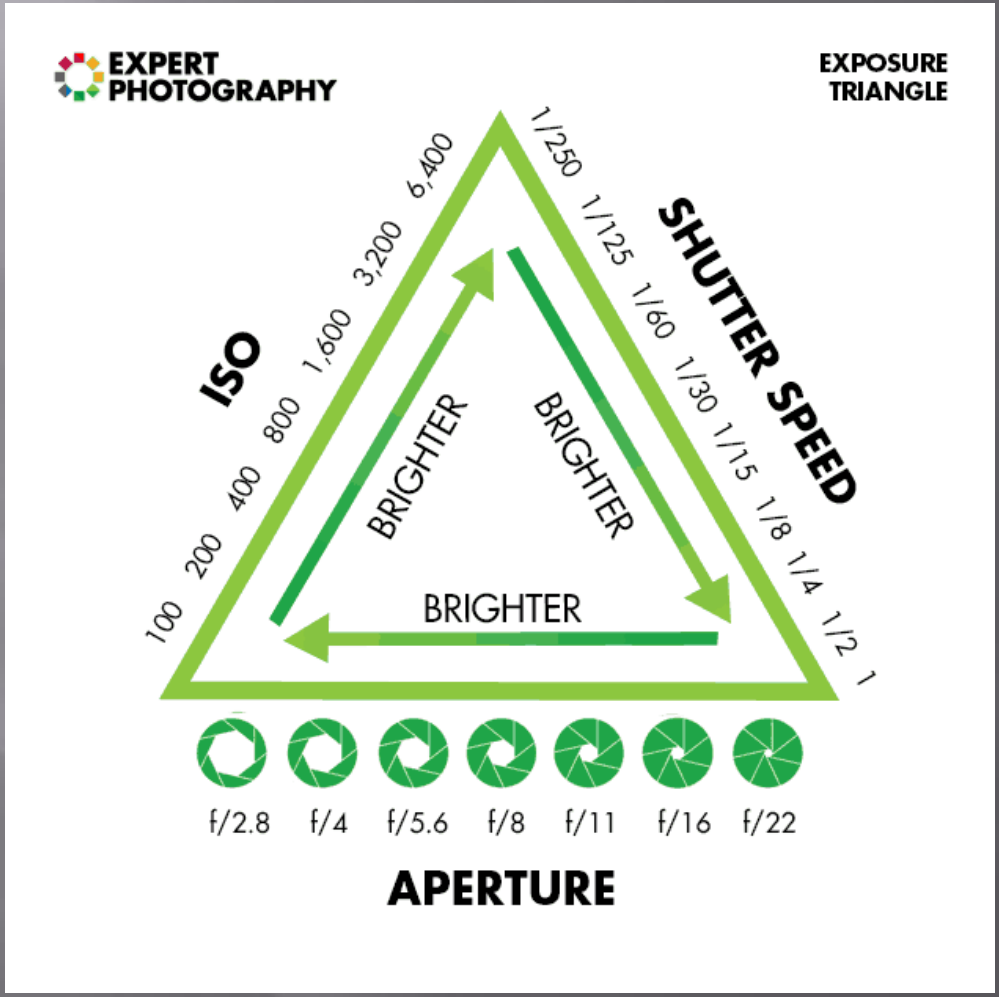
Slow Shutter =
More Light, Captures Motion

Fast Shutter =
Less Light, Freezes Motion

ISO

- Once the light has passed through the aperture and been filtered by the shutter speed, it reaches the sensor, where we decide upon the ISO. As you turn the ISO number up, you increase the exposure but, at the same time, the image quality decrease. There will be more digital noise or “grain”. **So you have to decide upon your priorities in terms of exposure vs. grain.**
- For example, I would reduce the image quality if it meant that I could prevent motion blur in my photo. There’s no possible way to fix that in post (yet, at least).

Triangle of exposure



Use microphone to record sounds

Microphone

- • Convert sound waves into electrical signals.
- • Used in communication, music recording, broadcasting, and speech recognition.

Types of microphone

- We collect audio through a gadget called microphone . On studying microphone we focus on:-
- • Pic up pattern • Types of microphone – (Manufacturer/usability) • Characteristics of the types

#1. Pic up pattern

- #1. Pic up pattern
- Microphone has the way of collecting audio and that way is called microphone pattern. Microphone pattern is the way microphone collect sound waves.
- Different microphones have different pattern. Understanding microphone pattern helps to know which microphone to be used for which event.

Three basic types of pic up pattern

- 1. Omnidirectional;
- it pics sound from all direction…whatever sound waves in the surrounding area is picked in the same quality…it is good to be used picking sound of cloud like football fans

Applications of Omni-directional

- 1. Studio Recording: Crafting Natural Soundscapes

- Field Recording: Capturing the Wild and Natural

- Conference and Meeting Rooms: Aiding Clear Communication

2. Uni directional;

- A **unidirectional microphone** is a type of microphone that **primarily captures sound from one direction** while minimizing sounds from other directions. It is commonly used in **speech, stage performances, broadcasting, and studio recording** because it helps reduce background noise

3. Bi directional;

- This are used in studio.
- captures sound from **two opposite directions** (front and back) while rejecting sound from the sides. This makes it ideal for interviews, duets, and stereo recording techniques.

Applications of Bi-Directional Microphones

- **Interviews** – Captures two people sitting across from each other.
- **Duets/Vocals** – Records two singers facing each other.
- **Podcasting & Broadcasting** – Captures voices clearly from front and back

#2. How they are made up

- 1. Dynamic Mic
- This microphone does not need power to work, you only connect to the mixer and it start functioning. Characteristics They are reliable They are durable They are cheap (doesn't need power) They are easy to use / no complication
- Most of them are Uni directional

2. Condenser Mic

- It does not function without power. They use power either independent power cell in the microphone itself of power system in the mixer.
- Characteristics
- • Very sensitive, need handling with care
- • Not easy to use very complicated Some build in with button for two pic up pattern
- • Costly
- • Not much reliable

3. Ribbon Microphone

- These are advanced condenser microphones. They are sometimes called sound recording studio microphone because they are first microphone to be introduced in recording.
- Characteristics
- High ability in picking up sound waves
- Are very expensive
- Made to be used in only one place

Uses lighting technics producing tv images

Lighting

- Without good light you can not get a good visual because visual is everything about light
- Apart from it basic role right define a lot of things in the visual.
- Right used to create mood to the audience

Properties of light

#1. Quality;

- We define the quality of light until it hit the subject. In case of this property right can be soft or hard.
- **Hard light** create sharp shadow therefore you must need extra light to kill the shadow or you can use the diffusers/dimmers. (The mid day sun) NB: Hard light can also be used for an editor preference to send a certain message.
- **Soft light** creates soft shadow so it is good in production because it is very easy to kill the shadow

Cont…

#2. Intensity

- Different light sources provide different intensity. In case of intensity we have natural light and artificial light. Some productions ask high light intensity and other low intensity.
- **Natural source** is uncontrollable, but it can be modified by using diffusers and dimmers
- **Artificial source** in both controllable and can be modified

Cont…

#3. Color temperature

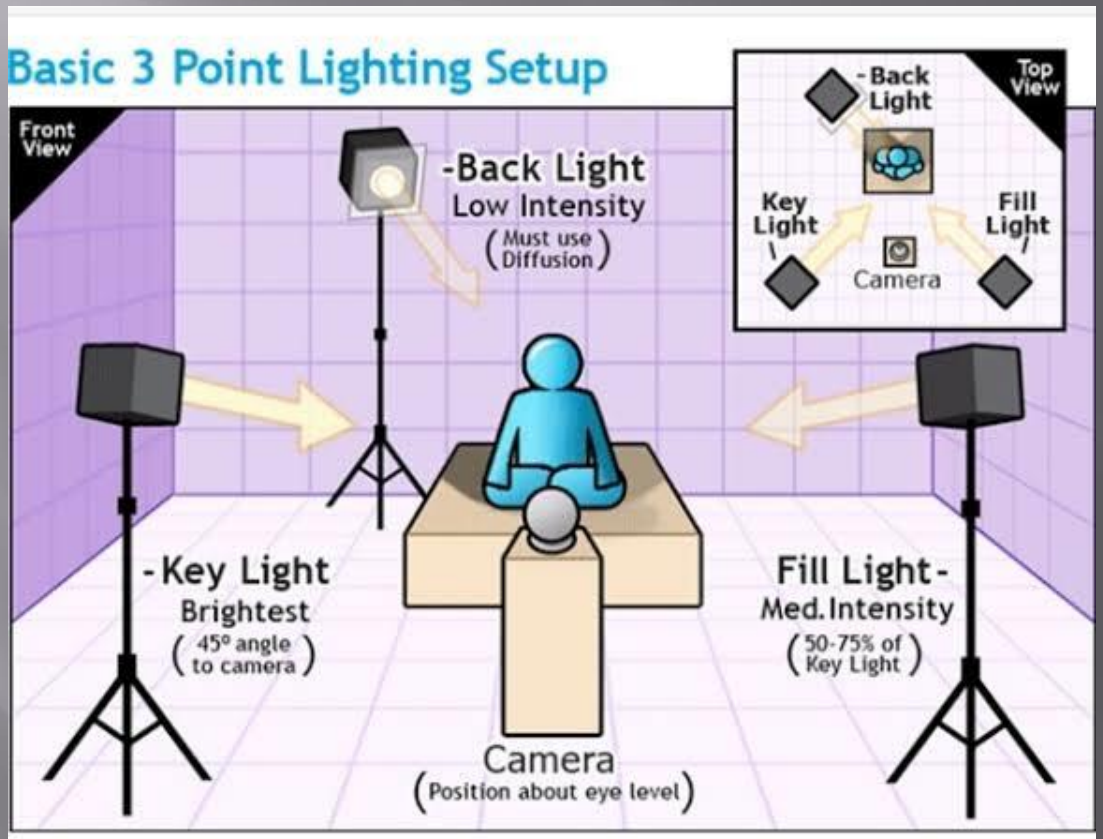
- Each kind of light source has kind of the color. Those color caused by a kind of source is called color temperature. They are used to send messages.
- Color temperature is measured by Calving (K°). There are two basic standard of color temperature:-
- 3200 K is standard for studio light / indoor
- 5500 K is standard for day time / outdoor
- Setting White balance auto mode it follows the above

Cont…

#4. Direction

- This means where the light is focus at
- There are three pointing light as they can me used together of single if they intend to send a specific message.
  - **Front light** it is place in front of the object not necessary 90˚ angle, it is the key light
  - **Side light** it is placed in the other side at least 45˚ angle toward the subject. It is used to kill the shadow created by front light.
  - **Back light** is placed behind or above the subject as it is used to create clear boundary between a subject and the background.

Pictorial Description



Pictorial Description