

WEN ZENG

QUICK
PHOTO
GRAPHY
GUIDE

WEN/WHY

I am (clearly) not a professional photographer. I'm a mechanical engineering student at MIT with a passion for photography and cameras. I became interested in photography in 2010 after acquiring my family's old Pentax ME 35mm SLR. Not long after, I saved up and bought a Canon T2i and learned both film and digital photography through experimentation and various online resources. I've gained experience through travel, portrait photoshoots (both hired and

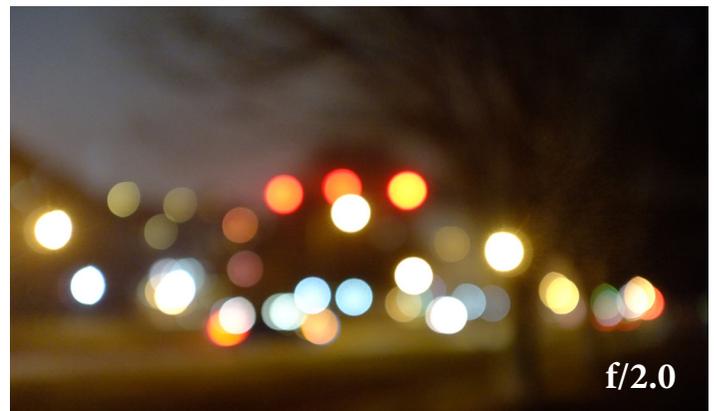
just for fun), school events, etc. I'm currently a product photography intern at a local Boston startup. While I still have a lot to learn, I thought I would try to share some of the knowledge I've gathered over the years in a concise manner.

If you would like to see more of my work, please visit www.wenzeng.net.

EXPOSURE

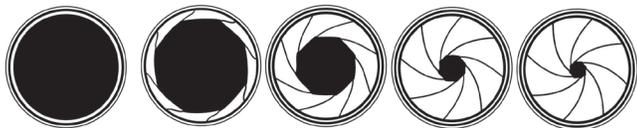
Exposure is the amount of light that hits a camera's sensor. In a modern DSLR, point and shoot, or iPhone, this is a digital sensor that will read the amount of the light and produce an image from the data. In film cameras, it is the chemicals on the film that react to the light. If too much light hits the sensor, it is referred to as "overexposure." If too little light reaches the sensor and the image is too dark, it is referred to as "underexposure." The three factors that influence exposure are aperture, shutter speed, and ISO. These three factors can be combined in many different ways to produce a usable exposure for an image.

ing the aperture. For example, $f/2.0$ lets in twice as much light as $f/2.8$.



APERTURE

Aperture is the size of the lens opening. This is controlled by a mechanical diaphragm inside every lens. The aperture usually referred to as $f/(\text{number})$. When the numbers get larger, the opener gets smaller. Yeah, it's a bit counterintuitive. In the diagram below, the aperture numbers are increasing to the right.



The f/stop numbers that most photographers are likely to encounter are 1.4, 1.8, 2, 2.8, 4, 5.6, 8, 11, 16, 22, and 32. There's a bit of math that goes into this, but the important thing to remember is that with each "stop," either half or double the amount of light will enter the camera, depending on if you are increasing or decreas-

So why would you choose to use different apertures? The main impact of aperture on the final result of an image is sharpness and "bokeh." Bokeh is the blurriness of a photo away from the focus point, and is produced with a large aperture opening (shown above). Large aperture is used to separate a subject from the background (shown below).



A small aperture (remember, big number!) results in a sharper image and a longer focus area. This is effective in landscapes or when you want more of your image to be in focus.



Notice how in the image above, the trees in the back are as clear as the trees in the front. This is due to the smaller aperture. That's about it for aperture!

SHUTTER SPEED

Shutter speed is the second piece to the exposure equation. Shutter speed refers to the amount of time the shutter is open to allow light to hit the sensor. These times are usually fractions of a second for most situations. Faster shutter speeds are needed to clearly capture moving subjects, while slower shutter speeds are used to convey motion. As a general rule, the slowest shutter speed I use if my camera is hand-held (no tripod) is 1/60 second. Usually, I will keep it faster than that (maybe 1/100) so my pictures do not

have unintentional blurring due to camera shake.

Here's an example of something you can do with fast shutter speed.



Or slow shutter speed! The water looks smooth because of the extended exposure time.



There are a lot of cool things that can be done with shutter speed. If you're looking for inspiration, you can look at Doc Edgerton's high speed strobe photography or artists that do light painting for both ends of the spectrum.

ISO

The last part to controlling exposure is ISO. This is the measure of the sensor's sensitivity to light. The lower the number, the lower the sensitivity. The higher the number, the higher the sensitivity, but at a cost. Higher ISO's have increased graininess and decreased color saturation in comparison to lower ISO.

ISO is a tool to help you balance shutter speed and aperture. For example, you are shooting without a tripod in a poorly lit indoor setting. Your aperture is as wide as your lens allows, and your shutter speed is already as slow as it can be without blurring. What

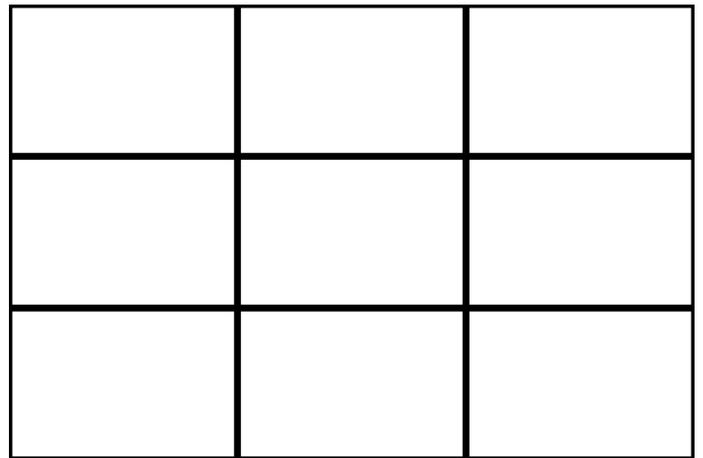
do you do? You can increase ISO sensitivity so that your image is not underexposed. There might be other situations when you'll want a particular aperture and shutter speed setting for a particular reason, and ISO will help you balance the other factors.

some of the best times to shoot for easy exposure.

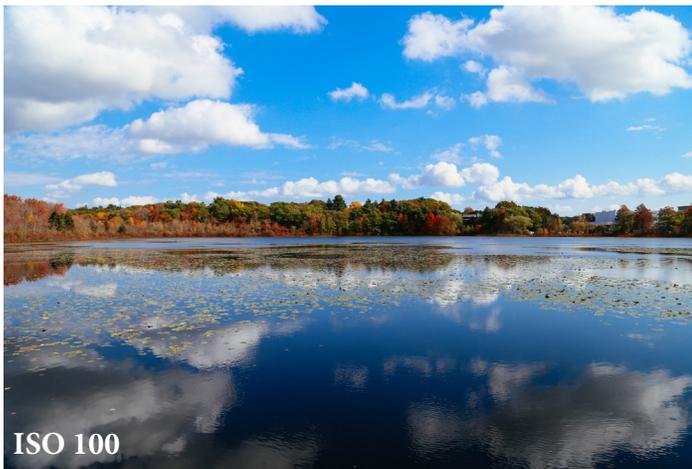
COMPOSITION

While learning the functions of a camera and balancing exposure is important, the composition of a photograph is what makes it captivating. Photography composition is a pretty complicated subject and there are entire books dedicated to composition, so I'll just talk about some basic guidelines.

The first one is the rule of thirds. Yes, it's really basic, but it works. If the grid below is overlaid on your photo, placing subjects or important points on the intersection points will help you create a balanced composition.



In the image below, the goose's head is placed on the intersection between the first vertical and first horizontal line. It is looking into the frame towards the right 2/3. This gives more context to the photograph and makes the image more interesting than if the goose was looking out of the frame.



If you want to focus on getting a better grasp of each of these three concepts, you can put your camera in aperture-priority mode or shutter-speed priority mode to experiment with the results. Depending on which mode you are in, the camera allows you to control either the aperture or shutter-speed, and it will adjust the other two settings automatically so the camera sensor gets the correct exposure. Even if you're in these modes, pay attention to your camera's light meter and how the other settings adjust to compensate for your selections. Even if you're not in complete manual mode, getting comfortable off "Auto" will give you a much better understanding of photography in general and give you more control of the outcome of your images. In general, try to avoid shooting into a light source unless you want a silhouette effect. Light is most easily captured and pleasing to the eye when it is diffused off of another surface. Sunrise and sunset are

Another factor to consider when composing a photograph is the placement of the horizon line. In general, placing a horizon in the center of the frame isn't very interesting (I did this in the ISO 100 picture, but I wanted to capture both the sky and the reflection). Depending on whether the sky-scape or the ground is more interesting, it is effective to off-center the horizon. For example, in the picture below, the horizon barely made it into the picture because I focused on the sky.



Here, I found the ground more interesting.



By filling the frame with more of what's interesting, the viewer gets a better sense of what the focus of the image should be.

I've talked a lot about off-center framing, but sometimes symmetry can be appropriate, too.



Leading lines can help guide a viewer through a photograph. These are visual lines in an image that the eye follows naturally. In the image below, the street and store signs create a line into the image that gives perspective.



Like I said, there are a ridiculous amount of different methods for composition, and this was meant to be a quick guide. Just keep these basic tips in mind, but always feel free to break rules if you're inspired to do so.

LAST TIPS

It would be extremely wonderful if all of our pictures turned out exactly how we imagined them. Sometimes your horizon won't be straight, the colors will be slightly off, or your picture will be too dark or too bright. Luckily, there's Photoshop, Lightroom, GIMP (it's free!), VSCOCam, or Aperture depending on your operating system or resources. I'm not going to go much into editing because this was intended to be a quick start guide, but definitely learn how to use imaging editing software because it is an invaluable skill to have as a photographer.

My best advice: Shoot whenever something captures your eye. Keep a camera on you at all times, whether that is an 35mm point and shoot or your cell phone. That way, you'll never miss an opportunity. Even having the most up-to-date gear and most expensive camera won't benefit you if you don't use it.

These are just the basics of the basics. If you're interested in more, there's always flash photography, macro, lens filters, film development, and much more... but I hope you enjoyed this guide!

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