Trish Nguyen

## Through the Camera Lens

What we take is what we see.



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The camera quality of an iPhone and every other smart phone today have been transformed to become devices that take images just like how an actual camera takes photos. The iPhone camera lens has ultimately changed over the many years since 2007 to 2019 as Apple continues to better it's technology within its software and especially its cameras every single time they release a new phone. The iPhone camera lens allows for the user to get the image that they want in the highest resolution possible having a greater range of possible views that one needs due to the addition of multiple camera lenses such as iPhone 11 Pro's camera.

The iPhone camera has drastically improved over the years. The most significant changes to the iPhone cameras are seen through, the iPhone 4, 6s Plus, 7 Plus, iPhone Xs and the most recent iPhone 11 and 11 Pro. The earlier iPhones such as the iPhone 4 has a 5 mega-pixel back camera consisting of the 4-element lens with an LED flash, aperture of f/2.8 and an illuminated sensor. Next is the iPhone 6 with its camera being 8-megapixel with an aperture of f/2.2, has a phase detection autofocus, and has a dual LED rear flash. Similarly, the iPhone 6S Plus has the same camera specs, but is 12-megapixles meaning better image quality.

The most revolutionising iPhones are the 2016 iPhone 7 and iPhone 7 Plus. The iPhone 7 Plus began the dual camera design- which consists of the wide-angled lens and the second being the telephoto lens which are both 12 megapixels and has sapphire glass to protect the camera lens from scratching. The camera of these two phones were the first step to something revolutionary for iPhone cameras as it consists of a six-element lens – used within the current iPhone cameras, which is 6 lenses that are combined into the camera for higher quality photographs and has a 12-megapixel sensor. The camera also has an optic image stabilisation mechanism which reduces the motion and handshake that is made when taking photos and had a longer exposure time than the previous phones.

The later and most recent phones such as the iPhone XS, is a better prototype of the iPhone X such that its camera is different and better. It uses the same camera build as the iPhone 7 of the six-element lens. It consists of a dual camera that are both 12 megapixels, with an aperture f/1.8 for the wide-angled lens and f/2.4 for the telephoto lens and have a sensor that measures  $1.4\mu m$ .

The next most significant phone camera is of the iPhone 11 Pro with the triple lens design. The three lenses like the previous phones have different purposes. The three lenses are the wide-angled, telephoto and the ultra-wide angled lens. Again, they are made consisting of the 6-element lens, with the lenses being 12 megapixels. The third lens is mainly for an optical zoom for a greater range which is one of the phone's greatest features.

The iPhone camera has changed the way we take images today and mobilises longstanding subjective impulses for making images, common to Kodak the company that made first camera made for the masses. The quality and result of the photographs are as close as taking photographs with an actual camera. As seen from above, Apple continues to improve their camera optics on each iPhone that they release. According to a research article by Chris Chesher, "The iPhone camera, compared with most dedicated cameras, is inferior in optics, image quality and ergonomics". The iPhone has the capability of taking high quality images and has an unlimited capacity to perform realtime digital transformations, translations and transmissions. Thus, the iPhone camera is not restricted to only taking images but can do much more.

The iPhone camera can always be improved which is what Apple has proved every time they release their new phones. The limitations to the iPhone camera is endless and will continue to grow as Apple continues to create more iPhones in the future.



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## iPhone 7 Camera: 6 - Element Lens

