



Macro Tilt-Shift

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Introduction

Macro photography looks at the world of the unseen up-close. With the use of special macro lenses, we are able to increase the magnification of a subject that could be smaller than a grain of rice and see it like any other “normal” sized object, however; this comes at a cost. Once we increase our lens magnification, our focal plane narrows, we lose focal depth, and the focus falls off almost immediately. This means that we will either have to increase our aperture or create image stacks, but once again this comes at yet another cost. We are only stuck on a single focal plane and with the need to be at a very close range to the subject we cannot change angles to capture alternate focal planes.

To capture these unique situations, a tilt-shift rig is needed. The tilt-shift rig gives the ability to manipulate the focal plane by allowing you to move the camera and lens independently from the other. Typically, these camera rigs are used for architecture photography and jewelry photography to correct for lens distortions or to capture multiple facets across a curved surface. This is unique as we can now capture new angles from the same position. The objective of this study is to apply the tilt-shift rig to macro photography and capture images from a new unique aspect.

Methods

In order to show the difference that the tilt-shift rig provides, this study will be split into 3 sections. Each section will evaluate the specific equipment that is used.

- The first section will show the macro lens manually focused, with no mechanical assistance.
- The second section will show the use of the stack shot rail system in combination to the macro lens.
- The third section will show the involvement of the tilt-shift rig.

Results

Section 1

After shooting a series of subjects using only the MPE 65mm Macro Cannon lens, the images, seen in the middle column, work as technical macro shots, however; these shots were captured with a fully closed down aperture (f/16) to get as much as possible in focus, reference image 2. If we reference image 1, which was shot with a wide open aperture (f/2.8), we can see just how thin the focal plane of this lens is. This vastly effects the scope of the shot, as parts outside of the thin focal plane are not in “true focus.” Overall these images are for the most part clean, but you are limited with what you can shoot by hand alone in terms of angles and distances for subjects.

Section 2

I used the stack shot rail in addition to the same macro lens from section 1 to capture the next set of images, seen in the third column. These images consist of 30 -50 individual shots at various focal depths, layered together. This is achieved with the stack shot by either moving the camera closer or farther away in increments down to the micrometer. These shots can then utilize the f/2.8 aperture to create a more in-focus shot, however; like the macro lens on its own, it s still limited in what it can shoot. Refer to image 10, bottom left column, we can see only a small portion of the thread is in focus. This is due to the thread curving off and causing the focal plane to only cut an extremely thin focal slice which, if the camera moves in to far, distorts the image being captured. One method to avoid this would be to use the tilt-shift rig to change to focal plane to capture more focal points.

Section 3

This section is still a work in progress. I am waiting on a piece of equipment that is on backorder.

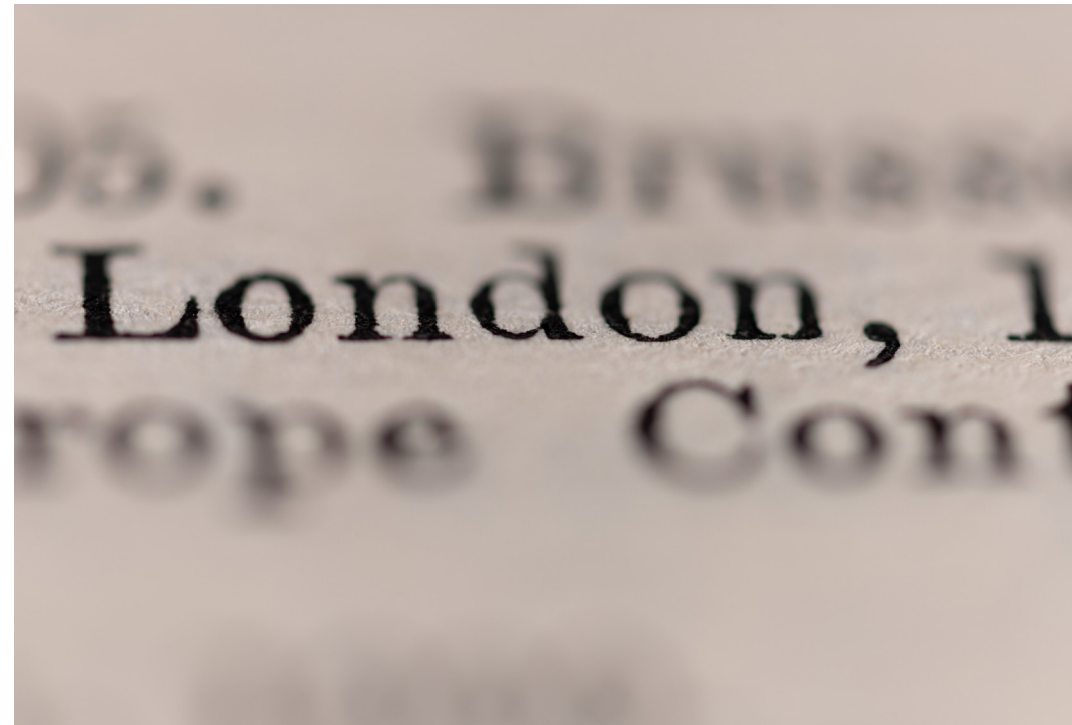


Image 1



Image 2



Image 3



Image 4



Image 5

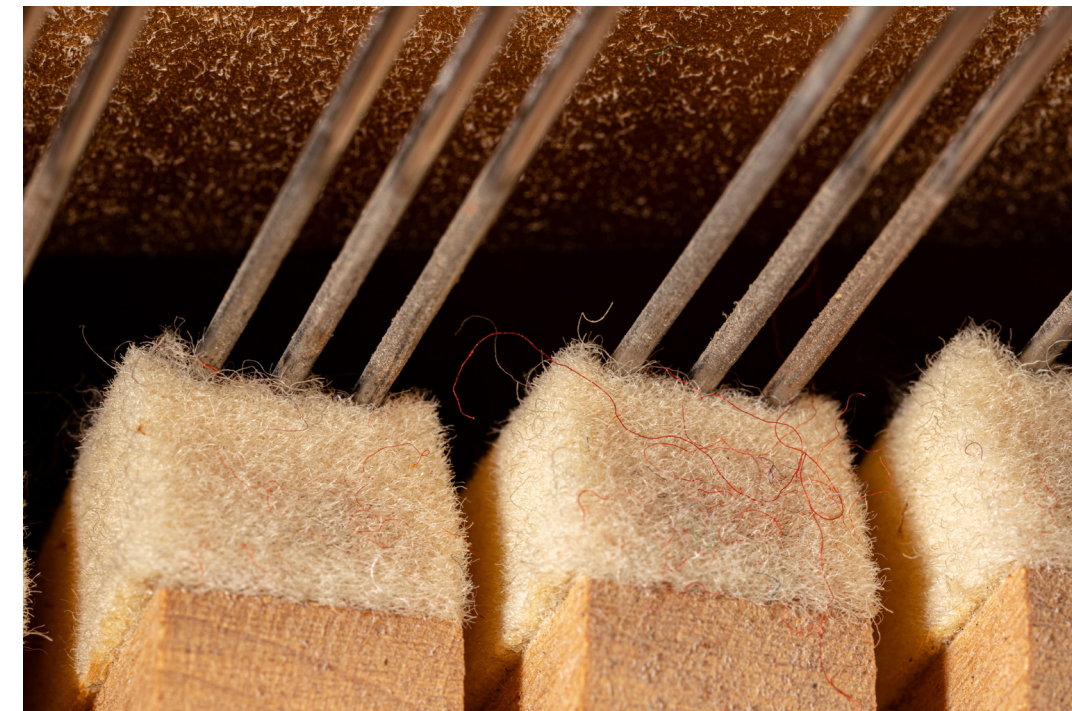


Image 6

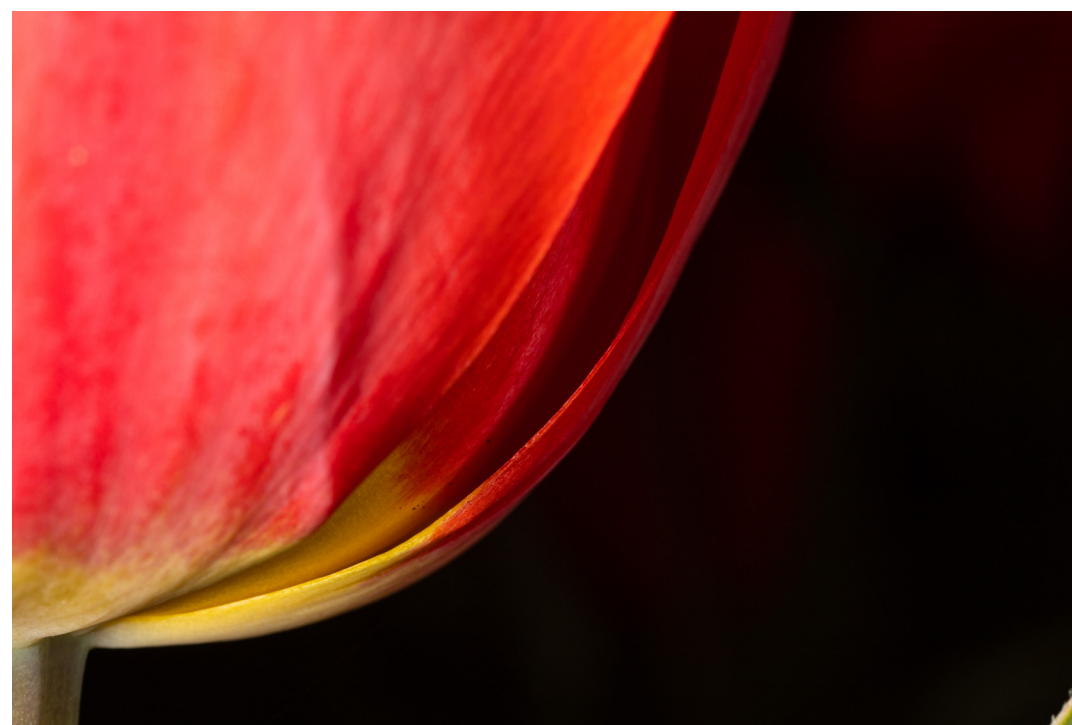


Image 7



Image 8



Image 9



Image 10