

\_blank | **REPOSITORY**

**Technical Guide and  
Productions Tips  
For Agisoft Photoscan**

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# Overview

Good practices, problems you may encounter during the scanning process and ways to approach those problems, involved in the process of scanning with Agisoft Photoscan, would be explained in this paper.

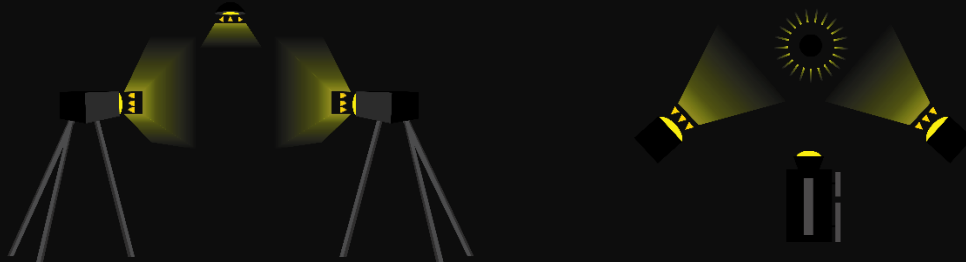
This Knowledge come from the experience gained during the process of creating the inventory at \_blank Repository. [www.blankrepository.com](http://www.blankrepository.com)

Agisoft Photoscan is the backbone of the production process at \_blank Repository. It's a powerful tool, but must be fed with the right data in order to function properly. Lighting, proper focus, masking and enough singular points are key to a successful scan process.

# Lighting

Proper lighting is fundamental in order to get the best from your camera and lenses. What we want to achieve in terms of lighting is a dome light, which is very similar to a bright cloudy day, if we think in terms of exterior lighting. No projection shadows, only a small occlusion.

Dome Lighting can be achieved with 3 main sources of light with diffusers, a main one from the top and 2 fill lights from the side. As shown in this graphics.



Lights should have the same intensity, the angle of the fill lights can vary depending on the object, but a good starting point is 45 degrees. Having all lights with the same intensity should ensure us no visible signs of the lighting sources in our objects, but a clean object that is illuminated from everywhere.

Lighting the background should be fairly simple, as we need it to be as plain and uniform as possible, for an easiest masking process, and avoiding problems with the alignment process. Extra lighting only for the background should be applied if the result is not appropriate with the 3 point lighting.

# Masking

Masking is an important and powerful feature of Agisoft Photoscan, it really makes a difference for the alignment process, cloud dense and specially the texture creation process.

For starters, masking will leave out any unwanted information from our photos that will make the process of alignment slightly faster, and will result later in a dense cloud without any floating pieces separated from our main model. But the masking will truly helps the texture we are going to create later. Sometimes the alignment process and dense cloud creation process will be just fine without any masking, especially if the lighting is like a dome light, but the texture may appear with parts of the background blended in the texture in the areas where the edge of the object interacts with the background.

Masking is also very useful when a percentage of a photo is blurred and we don't want to feed the program with these information, we can just mask out the blurred part, leaving only the correct focus in our image, this will also be a great help for the texture creation process, because that will prevent our texture to be blurry in some points and sharp in others.

# Do's and Don'ts

Agisoft Photoscan is a powerful tool, but must be fed with the right data in order to function properly. Here are some good practices applied in the production process at \_blank Repository.

## Do

- Always feed the program with photos where at least 60% of the photo is on focus.
- Perform Close-up photos only for small details
- If you need a photo with less than 60% of the photo on focus, mask out the out of focus part of the image.
- If you are photographing a small object and you get too much background information per photo mask out the unwanted background information from the photos in order to feed the program more object info and less background info, this will decrease the alignment time considerably.
- Always use high contrast between the object and the background

## Don't

- Feed the program photos with too many photos or just a few, a good rule of thumb it's to give the program photos with at least 60% overlapping.
- Color correct the photos in an editing software (i.e. Photoshop), may cause alignment problems, because depending on the lighting system and camera, some of the photos may have slightly different tones or lighting values.

# Troubleshooting

During the process of scanning our inventory, we have found that when the alignment process doesn't work on high or medium accuracy, it usually does work on low accuracy, this have no significant impact in making the dense cloud in High Quality and posteriorly the model also in High Quality.

Sometimes changing the order of the photos to a more logical way for the software to process (not the order you take the photos, but an order where you can see the overlapping happening photo after photo).

Every object is different and you have to identify the key aspects of every single object you are scanning. Some key factors are:

- Size
- Specular Amount / Shininess
- Singular Features / dots, dents, changes of hue, etc...
- Texture / Smooth, rough, irregular, etc...
- Light Scattering / Light absorption

## **Size**

Small objects are more difficult to shoot because of the amount of depth of field you'll get, even with an f18 or so. Between a 60mm and 80mm lens would be a good option for those small objects. A Macro Lens is a good option too.

## **Specular Amount / Shininess**

Shiny objects will produce artifacts in the mesh and texture if not treated right. Talc powder or cornstarch may be a good solution in some cases. Sometimes fruits and vegetables can be boiled for a short amount of time, in order to reduce their shininess. But this is not recommendable in most cases, because the color and consistency of the product may vary.



### **Singular Features**

Dots, dents, changes of hue, scratches. Pretty much anything the software can use as a kind of tracking point is really useful for the alignment process, especially if you are using a single camera. This will help the software assume you are moving the camera instead of the object.

### **Texture**

Smooth objects are more difficult to scan than irregular, rough objects. This can be overlooked if the color of the object have singular features. Smooth objects with smooth textures usually generates artifacts when processed.

### **Light Scattering / Light absorption**

Most organic and some synthetic objects have this feature, in which light in the form of propagating energy is scattered. This produce changes in the hue and in some case incandescence of the product, with rims of a lighter, contrasted color around the edges of the object when a powerful source of light is behind them. This can be resolve with less intensity in the lights and a bigger ISO value on the camera to compensata. Try not to push only the ISO of the camera, but also the Shutter Speed, in order to gain more light and less grain.