

彩色三维数字化拍摄要点说明
Photo Shooting Tips
for 3DeVOK Mapping Software

拍摄设备 Photography Equipment



摄影转台 Turntable

推荐采用可编程式摄影转台，联动单反相机快门，输入采集间隔度数，自动快速地采集多角度照片数据。

It is recommended to use a programmable photographic turntable, link the shutter of the SLR camera, input the acquisition interval in degrees, and automatically and quickly collect multi-angle photo data.



单反相机 SLR Camera

推荐采用超5000万像素的高分辨率全画幅单反相机，搭配微距相机，能够更为有效获取照片中的纹理细节。

It is recommended to use a high-resolution full-frame SLR camera with over 50 million pixels and a macro camera, which can more effectively capture the texture details in the photos.



白织灯具
Incandescent Light

推荐采用400W的白织闪光灯或者搭配200W的常亮白织灯具，保证全方位、均衡的光照条件。

It is recommended to use a 400W incandescent flash or a 200W always-on incandescent light to ensure all-round and balanced lighting conditions.

拍摄设备 Photography Equipment



三脚架 Tripod

用于固定相机拍摄，减少因为手部抖动或快门时间设置过长导致的摄影模糊问题。

It is used for fixed camera shooting to reduce the blurring of photography caused by hand shake or long shutter time setting.

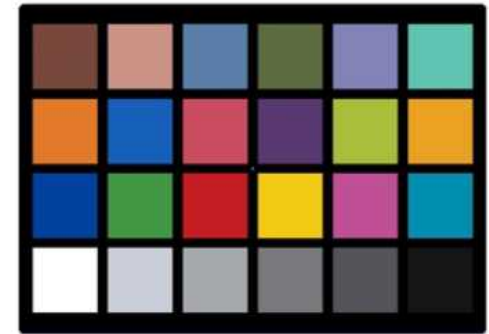


[The image can be printed for reference](#)

特征垫 Patterned Pad

当物品上的纹理特征不够丰富或纹理特征比较小或纹理特征具有重复性时，可以在拍摄物品时，底部放置一个特征垫（创造连续、不重复、比较明显的纹理特征），用于照片相对定向时，可以进行更快速、更精准地计算。

When the texture features on the item are not rich enough or are repetitive, a patterned pad can be placed at the bottom (creating continuous, non-repetitive, and obvious texture features) when the item is photographed, which can be used for relative photos.

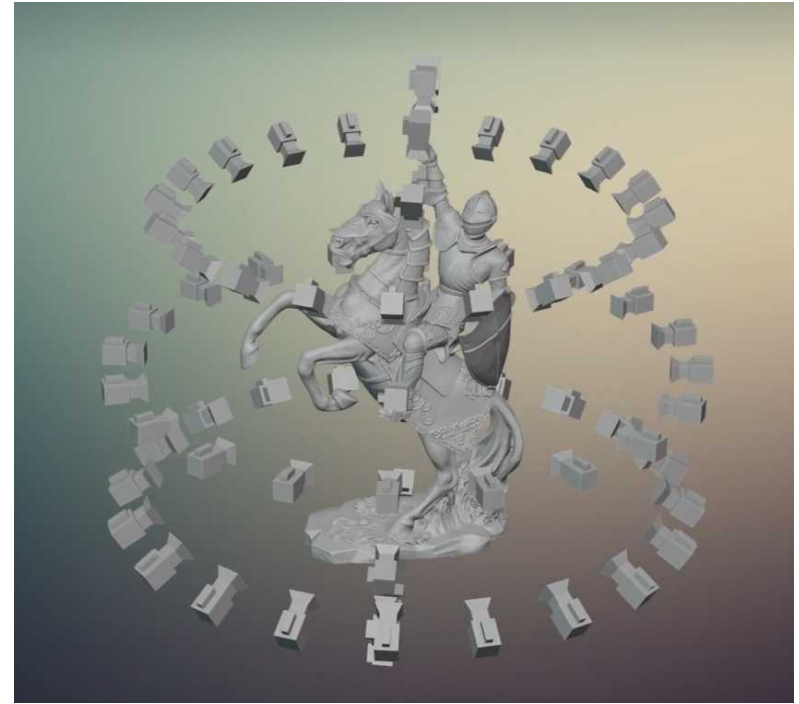


24色标准色卡
24 Color Card

用于校准拍摄照片的色相、饱和度和明度，还原器物真实表面纹理颜色。

It is used to calibrate the hue, saturation and lightness of the photos, and restore the true surface texture color of the objects.

摄影布置示意图 Photo Shoot Setting



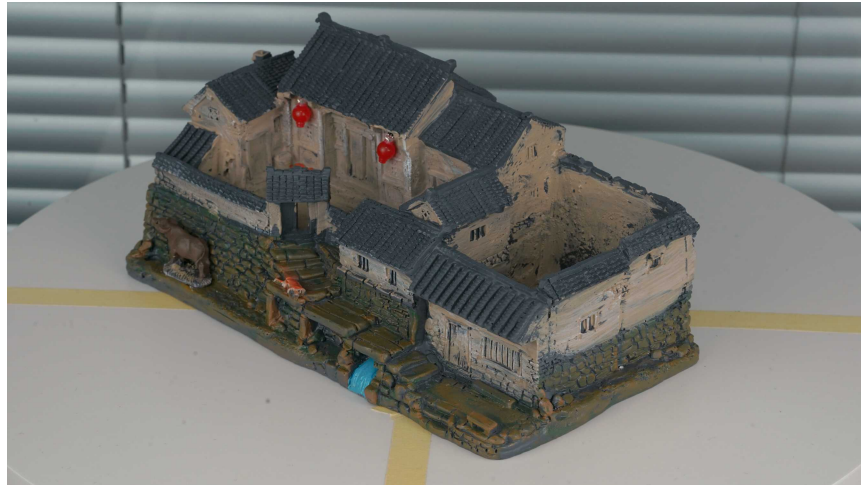
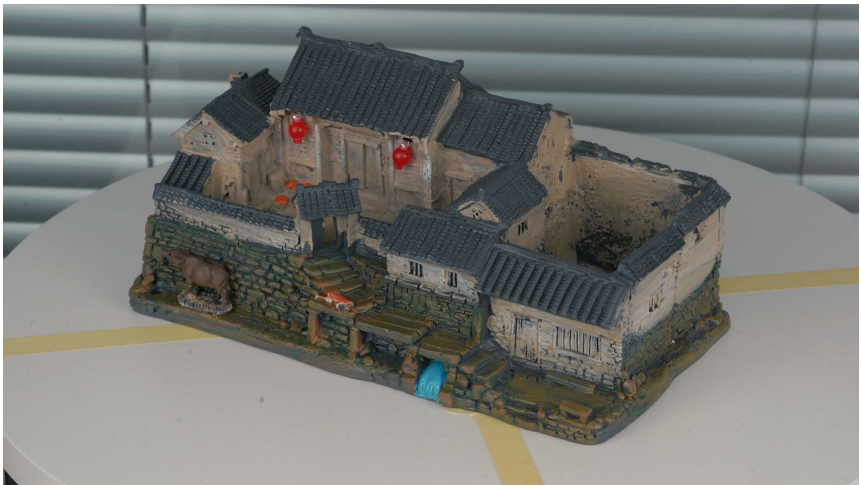
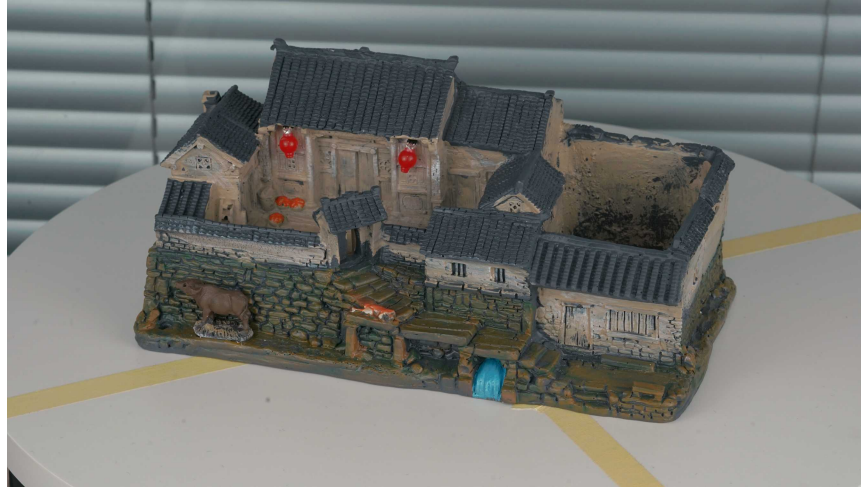
在摄影布置现场，器物 and 特征垫摆放在摄影转台的中心，白织灯摄影灯具*2呈60°到90°夹角补光，可以使用白纸作为摄影背景，尽量保证单调。在摄影布置现场，器物 and 特征垫摆放在摄影转台的中心，白织灯摄影灯具*2呈60°到90°夹角补光，可以使用白纸作为摄影背景，尽量保证单调。单反相机放置在三脚架上，保证可调节高度分别为俯角0°、30°和60°，且需保证被拍摄物品处于相机的视野中心，然后对准物品拍摄。

对于反光物体，灯光不应采用直射方式，而是从两边夹角打光，可以保证直射面清晰且曝光正常，也同时减少异物投影。

On the photographic layout site, the items and patterned pad are placed in the center of the photographic turntable, and the two incandescent lights fill in at an angle of 60 degree to 90 degree. White paper can be used as the photographic background to ensure monotony as much as possible. The SLR camera is placed on a tripod to ensure that the adjustable height is at a depression angle of 0 degree, 30 degree, and 60 degree relatively, and it is necessary to ensure that the object to be photographed is in the center of the camera's field of view, and then aim at the object to shoot.

Make sure not to use direct light on reflective objects. Fill the light from the included angle of both sides can ensure that the surface is clear and the exposure is normal, and at the same time reduce the projection of foreign objects.

拍摄流程 Shooting Process 不同角度拍摄 Different angles

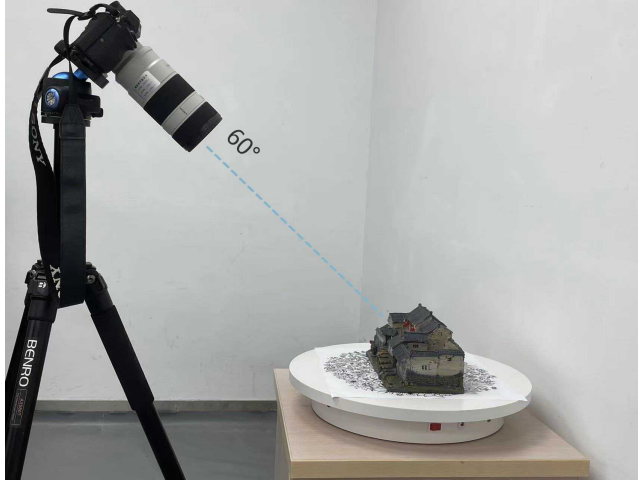


拍摄过程中调节转盘旋转角度，正常约**15-18度**拍摄一张照片（一圈20-24张），如果为反光物体，约**12-15度**拍摄一张照片（一圈24-30张），
注意：同一位置不要采集多张重复照片，为保证定向精度和成功率，需要在转盘上放置特征垫。

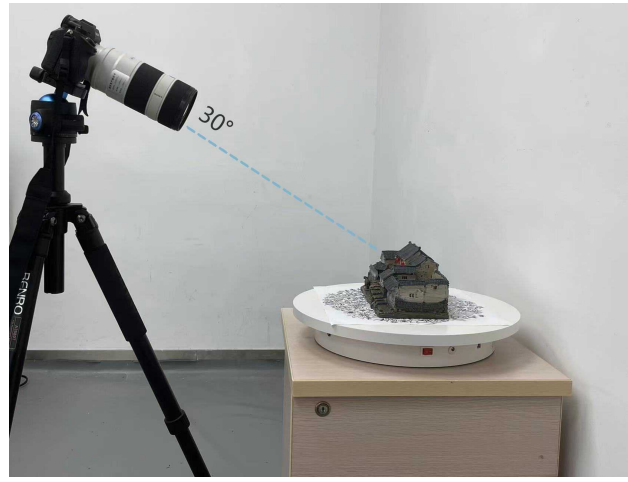
During the shooting process, adjust the rotation angle of the turntable, normally about 15-18 degrees to take a picture (20-24 pictures in a circle),
If it is a reflective object, take a picture at about 12-15 degrees (24-30 pictures in a circle),
Note: Do not capture multiple photos at the same location. To ensure orientation accuracy and success chance, patterned pads need to be placed on the turntable.

拍摄流程 Shooting Process

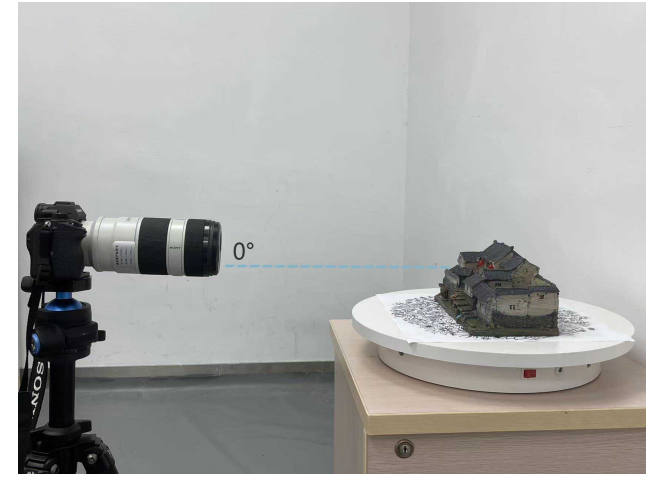
不同高度拍摄 Different heights



上 Upper side



中 Middle side



下 Lower side

分上层60°中层30°平层0°，进行拍摄，垂直补拍3-5张。
须反复翻转或侧翻后同样按多层拍摄，直至获取到所有清晰外表面纹理，
距离以保证最近对焦距离为宜，范围以充满镜头1/2至1/3为宜。

- Take photos respectively from the **upper side (60 degree)**, **middle side (30 degree)** and **lower side (0 degree)**. And take **3-5 vertical shots**.
- It is necessary to **repeatedly flip or roll over and shoot in multiple sides** until all clear outer surface textures are obtained.
- The suitable distance should be within the closest focusing distance, and the range is suitable to fill the lens 1/2 to 1/3.

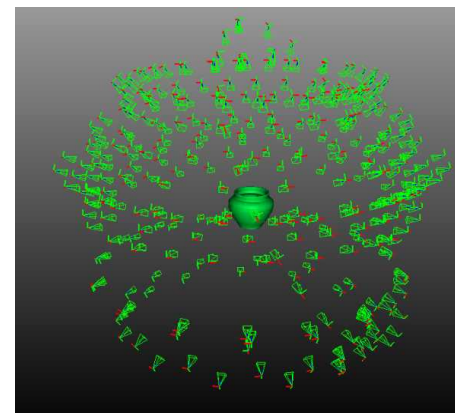
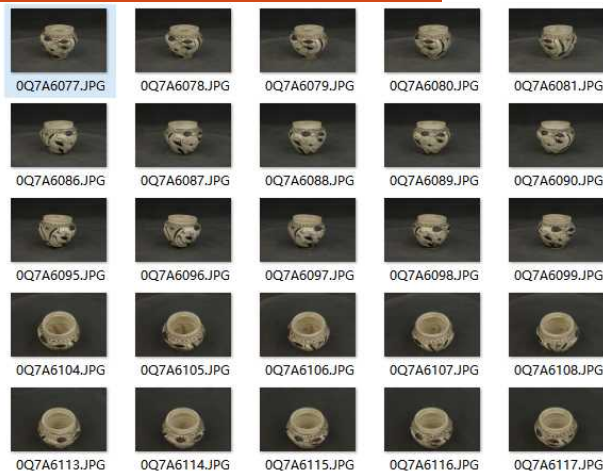
案例1 Case 1

大型陶罐 Large pot

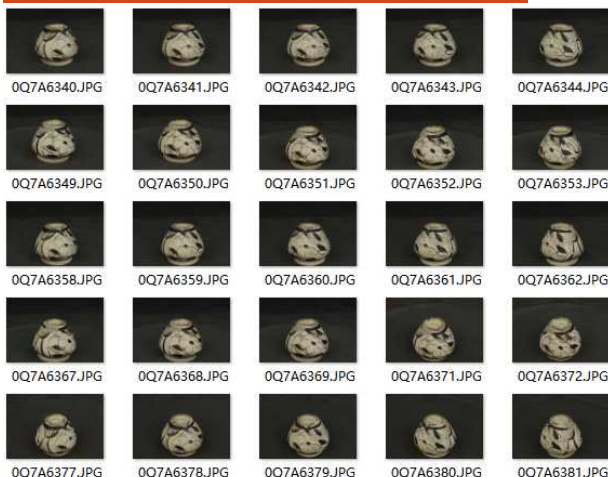
相机和模型位置图 Model and camera position map



正面 From the upright



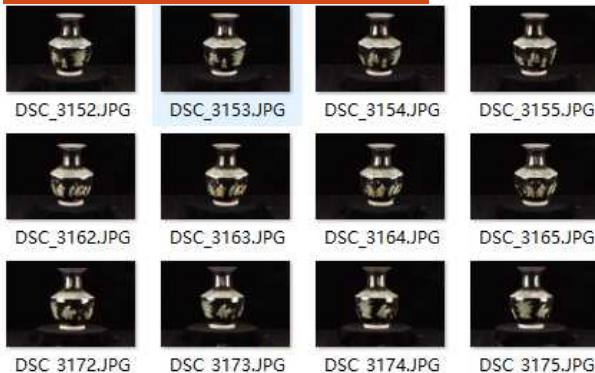
反面 From the upside down



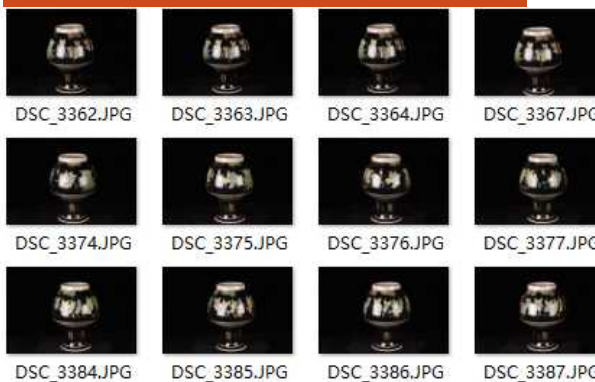
照片总数 Number of photos	352张 (精细拍摄) 352 (Precise shooting)
拍照思路 Suggestions	立拍6圈 (罐身、罐沿口、内壁)，倒拍3圈 (罐身、罐底沿、罐底)，侧拍2圈 (罐内壁、罐内底) 6 circles of vertical shooting (pot body, pot edge and inner wall), 3 circles of inverted shooting (pot body, pot bottom edge and pot bottom), 2 circles of side shot (the inner wall and the inner bottom of the pot)
拍照要点 Tips	1.大型器物，需要增加拍摄圈数 2.需要由远及近，可以拍摄到陶罐的清晰纹理； 3.器物 and 转盘应占据大比例面幅，且背景单调 1. For large objects, the shooting circles should be increased. 2. The clear crack textures of the pot can be recorded from far to near. 3. The object and the turntable should occupy a large proportion of the screen and the background should be simple.

案例2 Case 2 反光花瓶 Reflective vase

正面 From the upright



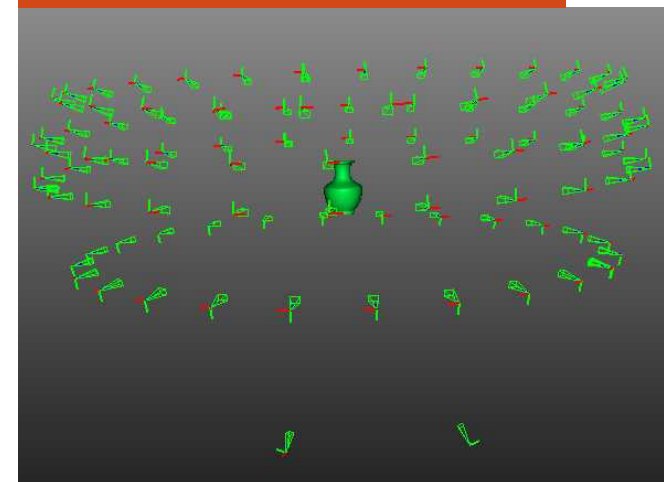
反面 From the upside down



底部 From the bottom



相机和模型位置图 Model and camera position map



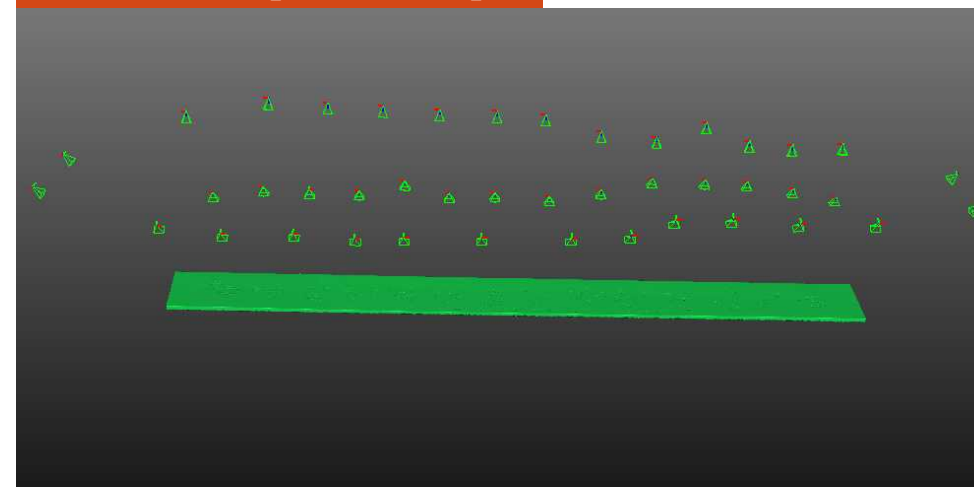
照片总数 Number of photos	109张（精简拍摄） 109 (Precise shooting)
拍照思路 Suggestions	立拍3圈（瓶身、瓶沿口、内壁），倒拍1圈（瓶身、瓶底沿）， 底拍2张（瓶底） 3 circles of vertical shooting (vase body, vase edge and inner wall), 1 circle of inverted shooting (vase body and vase bottom edge), 2 circles of shooting of the vase bottom.
拍照要点 Tips	<ol style="list-style-type: none"> 1.反光类器物需要确保12-15度拍摄一张照片 2.精简方式的瓶底补拍需要采集不同角度2-3张照片 3.若较少花纹，需要放置特征垫子于器物下方 <p>1. For reflective objects, make sure to take a photo every 12-15 degree. 2. Collect 2-3 photos from different angles when taking photos of the bottom. 3. If the pattern is not rich enough, place a patterned pad under the object.</p>

案例3 Case 3 长形牌匾 Long plaque

拍摄照片 Photo taken



相机和模型位置图 Model and camera position map



Number of photos	43张 (单面) 43 (Single sided)
Suggestions	分别垂直和俯角60°进行拍摄采集，保证50%以上重叠度。 The vertical and depression angle is 60 degree for shooting to ensure more than 50% overlap.
Tips	1.长型器物，无法放置在转盘上，可以放置在地面或者特征垫上，以摄影测量方式采集； 2.如需双面，反转后再次完成流程拍摄即可。 1. For long objects that cannot be placed on the turntable, try put them on the ground or patterned pads and collect the photos by photogrammetry; 2. If you need double-sided data, you can complete the shooting again after reversing it to the other side.