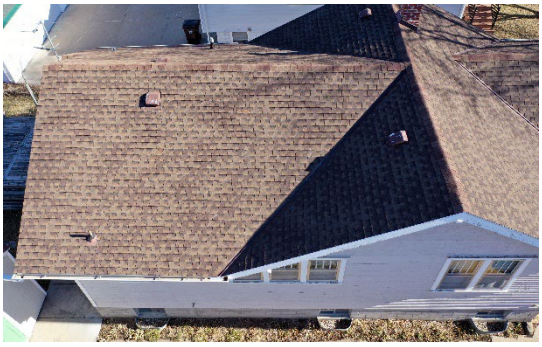
Tips for Photogrammetry Capture:

Static Object Capture: To have a successful photogrammetric reconstruction, your subject cannot move at all during the capture process. Movement will result in a partially or completely failed reconstruction because the software relies on identifiable points that remain in the same position from photo to photo. Movement will cause distortions in the reconstruction process, or outright failure.



Shadows: Shadows become a part of your 3D reconstruction. If you set your camera's exposure to properly capture the brighter surface, then the darker surface may reconstruct with holes or digital artifacts due to inadequate lighting where the photogrammetry software fails to identify enough tie points. Late afternoon and evening are difficult times to shoot photogrammetric images outside because of the fading light and long shadows. When sun-generated shadows are involved, do your photography when the sun is highest in the sky or on an overcast day to minimize shadows, and work as quickly as possible to capture your photoset to minimize shadow movement. HDR photography is a solution, but only if the camera remains motionless during the multiple exposure capture process.

Difficult or impossible to reconstruct materials include:

-Shiny and/or smooth materials (transparent glass, single color plastics, shiny metals, etc.)

-Single color materials lacking a physical texture (a blank piece of paper, or white wall)

-Transparent glass surfaces
-Mirrors
-Water

Difficult material: White Ceramic mug

Difficult material: Stainless steel tiffin

Difficult material: Black and clear plastic French press

Materials that are likely to result in successful photogrammetry reconstructions:

-Multicolored materials
-Materials with a texture you can feel, like concrete or fabric
-Organic materials like wood or stone

Easier material: A shoe constructed of fabric

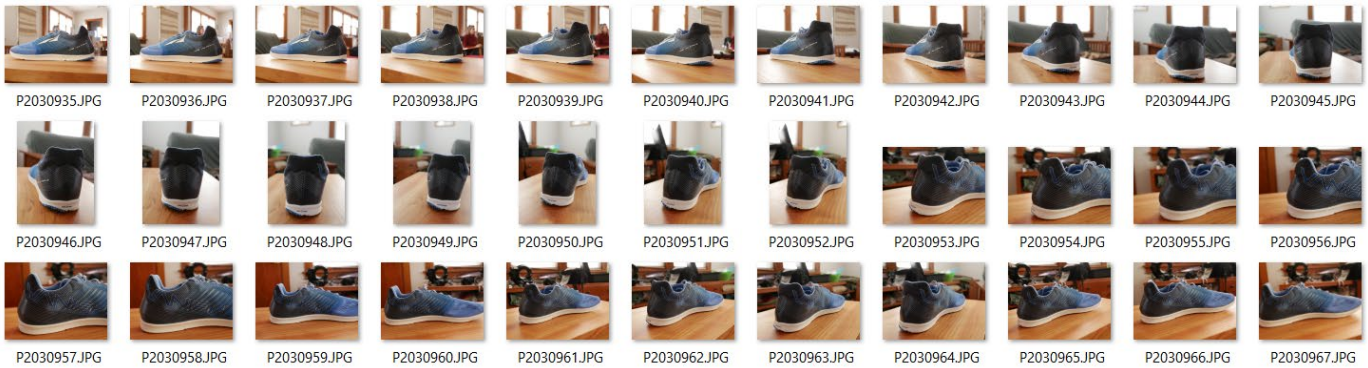
Easier material: The marble, rock, and dirt of an ancient temple site

Capture Strategies:

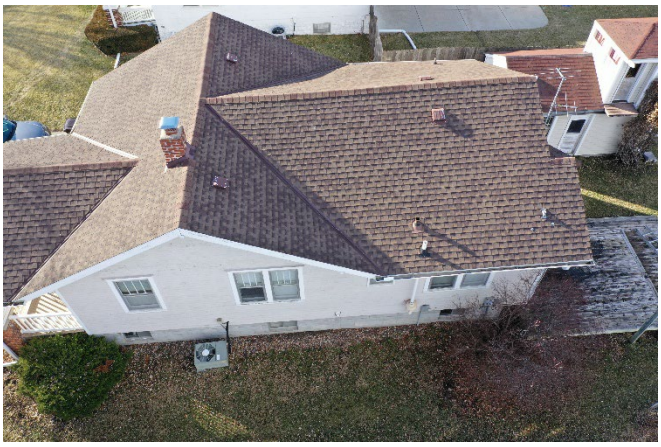
Important: Always capture photos with 70 to 80% overlap from image to image.

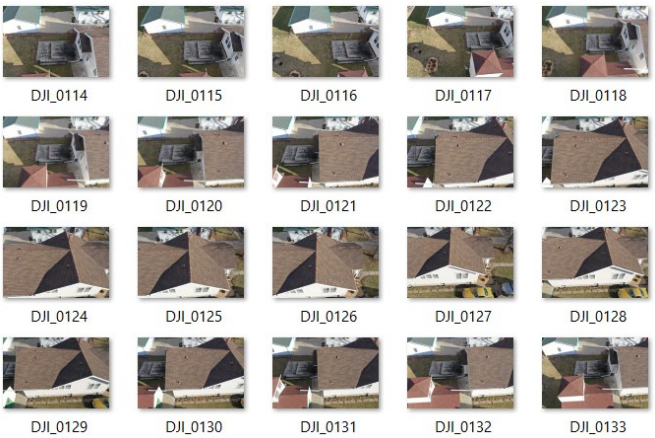
Structures and objects:
-For a structure (a building) or object (a shoe), take pictures while moving your camera all around the object. You want to capture the object from every perspective.

Your collection of images should look like a flip book, or individual frames from a video that was captured while moving the camera around your object:



Using the same camera movement process when photographing a structure, like a house, will result in the same type of image series:



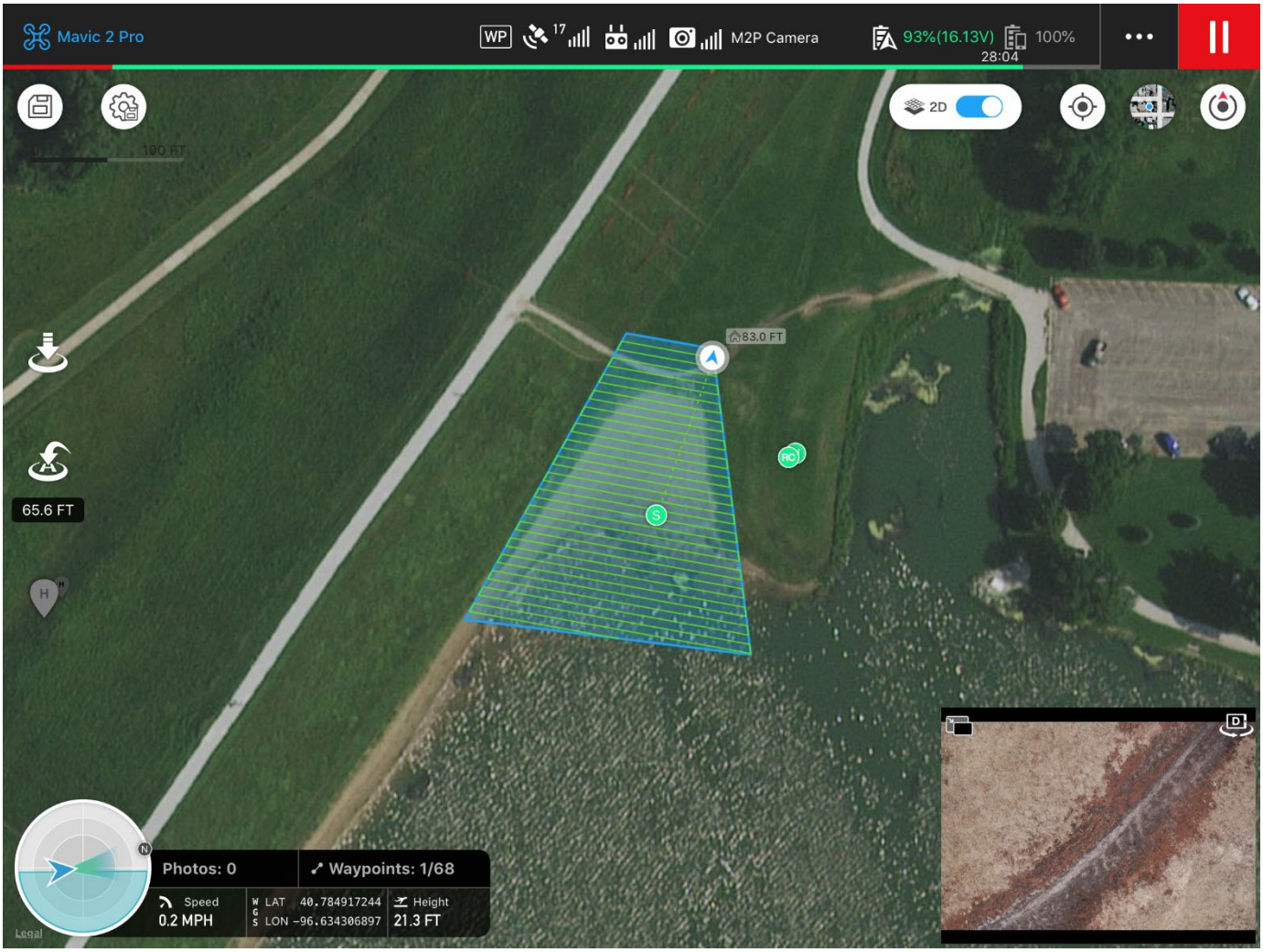


Capturing Interiors:
Photographing an interior space requires that you focus your camera outwards, with your image focus being away from the room's center and towards the opposing wall.

Capturing Landscapes with a Drone:

-Important: Always capture photos with 70 to 80% overlap from image to image.

When capturing photogrammetry images with a drone, I use the DJI GS Pro (Ground Station Pro) app to create a flight path over my capture subject. In the screenshot seen here, the green zig-zag line over the beach shows where I have programmed my drone to fly while capturing images, at a rate of about one photograph per second.



When using a drone to automatically capture images of a structure, or a landscape containing a structure, I tilt my drone's camera to an oblique angle of about 50° so the photographs will reveal the vertical walls of the structure, as opposed to if the camera were pointed straight down at the ground.