

Creating AR Assets

05.05.2018

Thomas Le, Patrick Maribojoc, Aliko Mwaisela

TLe@captechconsulting.com

PMaribojoc@captechconsulting.com

AMwaisela@captechconsulting.com

**(571) 485-7830**

www.captechconsulting.com

Copyright © 2017 CapTech Ventures, Inc. All Rights Reserved.

Contents

[1. What is Photogrammetry? 1](#_Toc513297255)

[2. Different Methods for Photogrammetry 1](#_Toc513297257)

[a. Photogrammetry Rig 1](#_Toc513297259)

[b. 3D Scanning 1](#_Toc513297260)

[c. Phone App 1](#_Toc513297261)

[d. Camera + Photogrammetry Software 1](#_Toc513297262)

[3. Overview of Camera + Photogrammetry Software Method 2](#_Toc513297263)

[a. Step one: Taking reference photos 2](#_Toc513297265)

[b. Step two: Scanning in the object 2](#_Toc513297267)

[c. Step three: Cleaning the 3D model 2](#_Toc513297269)

[d. Step four: Adding / retouching the texture 2](#_Toc513297271)

1. What is Photogrammetry?

Photogrammetry is the science of using photography to map out the exact surface points of any object or area. In recent years, the rise of Augmented Reality and Virtual Reality technologies have created a new spark of interest in photogrammetry. Specifically for AR, photogrammetry is used to photograph objects to convert them into useable 3D-assets within your AR application.

1. Different Methods for Photogrammetry

With technology moving towards more AR and VR applications, photogrammetry has become more accessible than ever. Here are several methods that are often used for photogrammetry:

1. Photogrammetry Rig

The most accurate way to scan in an object for development use is with an actual photogrammetry rig, which can cost upwards of a few thousand dollars. Although these get you the most accurate results and generally need the least amount of touch up once they are scanned, the price and required studio set up makes it inaccessible for most people and would not be a lucrative option for a client.

1. 3D Scanning

3D scanning is very similar to using a photogrammetry rig, but at a much smaller scale. It also uses specialized hardware to scan in an object. Although it is more affordable than a photogrammetry rig, the texture scanned in generally needs a bit of touch up before they are application-ready.

1. Phone App

Perhaps the most accessible photogrammetry option for the everyday user is to simply download an iOS or Android application that allows you to scan in an object with your phone. Most of these apps will cost up to $5. Unfortunately, the biggest drawback of using an app for 3D objects is that it retains the least amount of texture, requiring the most post-scan touch ups for a realistic 3D model.

1. Camera + Photogrammetry Software

Although less accessible than a simple phone app, using a combination of a camera alongside photogrammetry software is our recommended method for scanning in objects. It provides a good balance of cost, time efficiency, and quality.

1. Overview of Camera + Photogrammetry Software Method

As this combination of techniques is the one we have the most experience with, we will briefly go over how to create a 3D object using a camera and additional software.

1. Step one: Taking reference photos

Using any camera, snap a large amount of photos for “reference”. These are the photos that you will use to build your 3D model, so be sure to capture the object from every angle possible (overlapping of photos is recommended). Photographing the bottom of the object will not be necessary, as that will be taken care of with the software. When choosing an object to scan, try to avoid shiny objects as they will create a texture that is hard to work with. Also be sure to capture close up photos of your object to capture the details and textures.

1. Step two: Scanning in the object

The software we will use to create our 3D object is Autodesk Recap 360. Once you upload your photos into the application, it will automatically process your 3D object. This step may take some time. Your object is now scanned in, but the process is not complete.

1. Step three: Cleaning the 3D model

You may notice that the software picked up background details you did not intend, such as the table your object was placed on. To clean up the software, you can use Meshlab. Load the object into Meshlab and use the application to manually crop / erase portions from the model that you do not need.

1. Step four: Adding / retouching the texture

The final touch for this 3D object may be the most time-consuming. Using Substance Painter, you can repaint the object and add the necessary textures the object needs in order to look realistic. It’s important to note that an object will not look realistic in an app without some imperfections, such as dents, stratches, or rust. You should also use Substance Painter to fill in the bottom of the object that was not photographed in step one.