Get started with photogrammetry on macOS!

Ever want to create a real world 3D scanned image on your Mac? Here's how!

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C reating 3D environments on a computer has been a thing for quite some time. Typically, creating a 3D environment is a highly technical and skill based process taking many years of training to become proficient at.

One process is called photogrammetry. Named after a centuries old technique, photogrammetry allows you to create 3D images using a multitude of real world photographs of an object from many angles by stitching those photos together which later allows you to manipulate that image in 3 dimensions on a computer.

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Make your life easier by getting Agisoft PhotoScan

Agisoft PhotoScan (\$179) is the program I chose to use for my photogrammetry. It isn't inexpensive but it's not exorbitant either. There are free alternatives to create a 3D scanned image using these techniques. You can use <u>Visual SFM</u>, <u>CMVS</u> plugin and Meshlab to do the jobs that PhotoScan can do on it's own. On top of that you'll have to build some of those

programs from source code. To some that may be daunting. To others it may be right up your alley so If that';s your thing, you can follow this guide to get you started.

Here's how to get started for those of you who just want to make life a bit easier by using Agisoft PhotoScan. Agisoft offers a 30 day trial mode so you can try before you buy.

- 1. Navigate to ** http://www.agisoft.com/downloads/request-trial/ .**
- 2. Request a Trial License for PhotoScan Standard from sales@agisoft.com.
- 3. Download PhotoScan for macOS.
- 4. Double-click the PhotoScan installer .dmg file to start the installation.
- 5. Click Agree.
- 6. Double-click PhotoScan to start the application.
- 7. Enter your Trial License Code provided by Agisoft.

		🗧 🔵 📕 Agisoft PhotoScan Standard Activation
f you agree to the terms of his license agreement, click Agree" to access the coftware. If you do not igree, press "Disagree."	END-USER LICENSE AGREEMENT FOR AGISOFT PHOTOSCAN STANDARD VERSION 1.3 IMPORTANTI PLEASE READ THE TERMS AND CONDITIONS OF THIS LICENSE ACREEMENT CAREFOLLY BEFORE CONTINUING WITH THIS PROGRAM INSTALLATION:	Activate PhotoScan using a valid license or trial code
	AgiSoft End–User License Agreement ("EULA") is a legal agreement between you (either an individual or a legal entity) and AgiSoft LLC (referred to as "LISENSOF") for the AgiSoftis proprietary computer program (identified above) and related documentation, printed materials and/or "online" or lectronic documentation, (this program and documentation, as well as any updates which may at LICENSOFIS sole discretion be provided to you from time to time,	Continue using PhotoScan in demo mode
	are referred to in this Agreement as "PROCRAM". By installing, copying, or otherwise using the PROGRAM, you agree to be bound by the terms of this EULA. This license agreement represents the entire agreement concerning the PROGRAM between you and AglSoft LC, and is supersedes any prior proposal, representation, or understanding between the parties. If you do not agree to the	Cancel OK
	Print Save As Disagree Agree	

Take lots of photos!

Before we get started with PhotoScan, we need to take many (and I mean many) photos of the object we wish to 3D render. I chose a large hosta plant in my front yard. Make certain to take photos all the way around the object from many different angles and levels. Some low, some high. The more photos you take, the better the image but the longer to render. I simply use my iPhone and I click away. Here's the object I'll be 3D rendering:



Getting started with PhotoScan

Once you've taken all of the photos you'll have to upload them to your Mac. If you're patient, you can simply take your photos and wait for your iCloud Photo Library to sync up. I'm not so I manually sync my photos with a lightning cable.

- 1. Create a folder on your desktop and place your photos of your object in it.
- 2. Start PhotoScan.
- 3. Click Add Photos.



- 4. Navigate to your photos in the folder on your desktop.
- 5. Select all of the photos in the folder and click **Open**.
- 6. Click Workflow > Align Photos from the top menu bar.
- 7. Select the level of accuracy and click OK. The more accurate, the longer it will take. Aligning photos will calculate a number of points between the various photos that associate in 3D. It's output will show an image similar to pointillism and will also show each camera position I used whilst taking photos. This can help if you need to add more angles from which to take a photo.



- 8. Select Workflow > Build Dense Cloud from the menu bar.
- 9. Select the quality level and click OK. The higher the quality the longer it will take.

Add Photos	Processing in progress
Alian Photos	Reconstructing depth
Build Dense Cloud.	16% done, 00:05:41 elapsed, 00:27:56 left
Build Mesh Ruild Texture	Overall progress:
Align Chunks Merge Chunks	Minimize Pause Cancel
Batch Process	

https://www.imore.com/get-started-photogrammetry-macos

10. Sit back and relax as this will take a long time. Your output should will not have changed much at this point.



- 11. Select Workflow > Build Mesh from the menu bar.
- 12. Click OK.

Add Photos		Build Mesh
Align Photos Build Dense Cloud	Surface type: Source data:	Arbitrary 🗘 Dense cloud 🗘
Build Mesh Build Texture	Face count:	Medium (352,324 ᅌ
Align Chunks Merge Chunks	Cancel OK	
Batch Process		

- 13. Once again sit back and wait. Once this step is complete you should see something quite familiar!

- 14. Finally, Select Workflow > Texture for the menu bar.
- 15. Click OK.
- 16. You've just completed your 3D scan! You'll be able to rotate and spin as needed. We can now save it and export as needed.
- 17. Select File > Save >.
- 18. Name your save file and click Save.
- 19. Select File > Export Model.
- 20. Select the type of export you need and name your file and click Save.
- **21**. Done!

What next?

My next steps will be to add my 3D scene to the VR application Destinations. The effect of photogrammetry in VR is impressive and I hope to be able to recreate the various rooms of my home in VR. I'll detail those steps in a subsequent article.