

# Photogrammetry

**Photogrammetry** is the art, science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring and interpreting photographic images and patterns of electromagnetic radiant imagery and other phenomena.

There are many variants of photogrammetry. One example is the extraction of three-dimensional measurements from two-dimensional data (i.e. images); for example, the distance between two points that lie on a plane parallel to the photographic image plane can be determined by measuring their distance on the image, if the scale of the image is known. Another is the extraction of accurate color ranges and values representing such quantities as albedo, specular reflection, metallicty, or ambient occlusion from photographs of materials for the purposes of physically based rendering.

Close-range photogrammetry refers to the collection of photography from a lesser distance than traditional aerial (or orbital) photogrammetry. Photogrammetric analysis may be applied to one photograph, or may use high-speed photography and remote sensing to detect, measure and record complex 2D and 3D motion fields by feeding measurements and imagery analysis into computational models in an attempt to successively estimate, with increasing accuracy, the actual, 3D relative motions. **Would you like to try photogrammetry?**

There are multiple free or inexpensive software options. Please note, **Autodesk ReCap is the only available option to use in the computer lab.**

Name	Type	Output File Formats	OS	Price
<a href="#">COLMAP</a>	Aerial, Close-Range	ply, vrml	Windows, macOS, Linux	Free
<a href="#">Meshroom</a>	Aerial, Close-Range	abc, obj	Windows, Linux	Free
<a href="#">MicMac</a>	Aerial, Close-Range	geotiff, ply, xml	Windows, macOS, Linux	Free
<a href="#">Multi-View Environment</a>	Aerial, Close-Range	MVE	Windows, macOS	Free
<a href="#">OpenMVG</a>	Aerial, Close-Range	ply	Linux, Windows, MacOS	Free
<a href="#">Regard3D</a>	Aerial, Close-Range	obj, ply	Windows, macOS, Linux	Free
<a href="#">VisualSFM</a>	Aerial, Close-Range	ply	Windows, macOS, Linux	Free
<a href="#">3DF Zephyr</a>	Aerial, Close-Range	ply, obj, fbx, pdf 3D, u3d, dae, pts, ptx, xyz, txt, las, e57	Windows	Limited free version and paid version from €149+tax
<a href="#">Autodesk ReCap</a>	Aerial, Close-Range	asc, cl3, clr, e57, fls, fws, isproj, las, pcg, ptg, pts, ptx, rds, txt, xyb, xyz, zfs, zfpj	Windows	From \$40/month
<a href="#">Agisoft Metashape</a>	Aerial, Close-Range	fbx	Windows, macOS, Linux	From \$179
<a href="#">Bentley ContextCapture</a>	Aerial, Close-Range	3ms, 3sm, kml, dae, fbx, obj, dae, stl	Windows	On request
<a href="#">Correlator3D</a>	Aerial	.asc, geotiff, .las	Windows	From \$250/month
<a href="#">DatuSurvey</a>	Aerial, Close-Range	ENH, NEH, DXF, PLY, PDF, LAS, PNG, GTIFF	Windows	From \$350/month
<a href="#">DroneDeploy</a>	Aerial	dxf, GeoTIFF, las, obj, xyz	Windows, macOS, Android, iOS	\$149/month or \$99/month when billed annually
<a href="#">Elcovision 10</a>	Aerial, Close-Range	All currently known image formats	Windows	On request
<a href="#">iWitnessPRO</a>	Aerial, Close-Range	TXT, CSV, PTS, LAS, PLY, DXF, KML	Windows	\$2,495
<a href="#">IMAGINE Photogrammetry</a>	Aerial	img, igg, ovr. l, noaa, rpf, ddf, dem, til, dt2, ecrg, hdr, xml, ecw, url, ant, dig, alg, ers, gis, lan ...	Windows	On request

LiMapper	Aerial, Close-Range	PLY, OBJ, LAS		On request
Photomodeler	Aerial, Close-Range	3ds, 3dm, dxf, igs, kml, kmz, las, ma, ms, obj, pts, byu, facet, iv, ply, stl, txt, wrl	Windows	One time fee of \$995 or from \$49 /month
Pix4D	Aerial	obj, fix, dxf, las, las, kml, tif, osgb, slpk, shp	Windows, macOS, Android, iOS	One-time fee of €3,990 or €260 /month or €217/month when paid annually
RealityCapture	Aerial, Close-Range	jpg, png, XYZ, XYZRGB, tiff, bmp, dib, rle, jpeg, jpe, jfif, exif, exr, tif, wdp, jxr, dds, KML, KMZ, obj, ply, partlist, fbx, dxf, dae, bvh, htr, trc, asf, amc, c3d, aoa, mcd, wmv, mp4	Windows	From \$99/for three months
SOCET GXP	Aerial		Windows	On request
Trimble Inpho	Aerial, Close-Range		Windows	On request
WebODM	Aerial	GeoTIFF, png, las, obj	Windows, macOS	From \$57