

Structure-from-Motion Photogrammetry

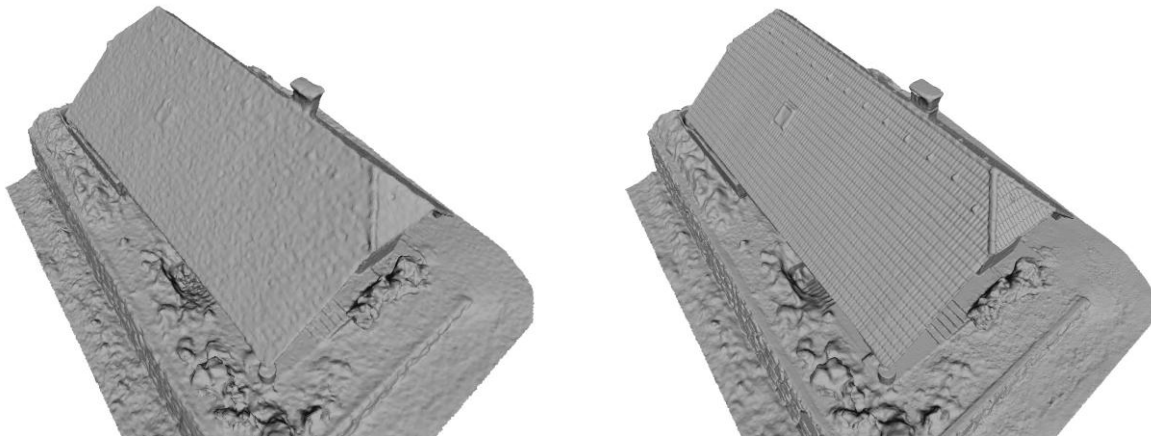
Software: 3DFLOW

What is Structure-from-Motion (SFM)?

It is the process of using various photos of the same object taken from multiple angles in order to create 3D models and imagery. It is important that the images overlap one another and are offset one from the other to provide the most detail (Carbonneau, 2017). SFM requires the use of ground control points to orientate and scale the 3D model in some instances, but 3DFLOW relies on propriety algorithms instead.

How does 3DFLOW work?

3DFLOW uses a series of proprietary algorithms and other technology to create high detail 3D models from 2D images. The first step in the process uses a technology called 3DF Samantha that determines an images orientation and position automatically. Next, an algorithm called 3DF Stasia extracts detailed point cloud information from the images. In the third step, another algorithm called 3DF Sasha extracts a surface mesh from the point cloud. After the surface mesh is extracted, another algorithm called 3DF Zephyr assigns appropriate color to each pixel in a process referred to as texturing. Next, software called photoconsistency adds additional detail to the 3D image as seen in the photo below.



The next step in the process uses an algorithm called Multi-ICP (Iterative Closest Point) to rectify differences between multiple point clouds. Finally, 3DF Masquerade is a masking operation that removes background noise from the final 3D model (3DFLOW, 2017).

How much does 3DFLOW cost?

<https://www.3dflow.net/3df-zephyr-pro-3d-models-from-photos/>

Citations

Carbonneau, Patrice E, and James T Dietrich. 2017. "Cost-Effective Non-Metric Photogrammetry from Consumer-Grade Suas: Implications for Direct Georeferencing of Structure from Motion Photogrammetry." *Earth Surface Processes and Landforms* 42 (3): 473–86. doi:10.1002/esp.4012.

"Our Technology." 3DFLOW. <https://www.3dflow.net/> (accessed September 10, 2017)