

The Study On The DSM Generated By SIFT And SfM Used UAV Image

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Abstract: Unmanned Aerial Vehicle (UAV) has high mobility and low flight altitude characteristic so it can take high-resolution images faster and safer, usually used in disasters prevention, protection, and environmental monitoring. However, UAV flight stability degree worse than traditional fixed-wing aerial photography, lead to generate large rotation angle between images, cause images matching not easier. Microsoft released a free software of Photosynth in 2008. It used Scale-Invariant Feature Transform(SIFT) and Structure from Motion (SfM) theory to build the coordinates of the object in 3D modeling, with color information. SIFT is robust and invariant for spatial scale, rotation angle or brightness of the image, therefore it was used in this study.

This study choose two of mound near the dormitory which at National Taipei University in Sanxia as experimental area. The aerial photography image used traditional aerial photogrammetry assessment by generated Digital Surface Model (DSM) which as the reference of accuracy Photosynth 3D point cloud generated DSM. Based on the RMSE of two DSM data, the accuracy of Photosynth point cloud generated DSM would be estimated. As well as analysis the land cover of influence in DSM accuracy.

Keywords : DSM, Point Cloud, SIFT, UAV