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PLANAR CONSTRAINTS FOR AN IMPROVED UAV-IMAGE-BASED DENSE POINT CLOUD GENERATION

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Abstract. In this paper, we proposed a new refinement procedure for the semi-global dense image matching. In order to remove outliers and improve the disparity image derived from the semi-global algorithm, both the local smoothness constraint and point cloud segments are utilized. Compared with current refinement technique, which usually assumes the correspondences between planar surfaces and 2D image segments, our proposed approach can effectively deal with object with both planar and curved surfaces. Meanwhile, since 3D point clouds contain more precise geometric information regarding to the reconstructed objects, the planar surfaces identified in our approach can be more accurate. In order to illustrate the feasibility of our approach, several experimental tests are conducted on both Middlebury test and real UAV-image datasets. The results demonstrate that our approach has a good performance on improving the quality of the derived dense image-based point cloud.

[Conference Paper](#) (PDF, 927 KB)

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