

A PERFORMANCE STUDY ON DIFFERENT STEREO MATCHING COSTS USING AIRBORNE IMAGE SEQUENCES AND SATELLITE IMAGES

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ABSTRACT:

Most recent stereo algorithms are designed to perform well on close range stereo datasets with relatively small baselines and good radiometric conditions. In this paper, different matching costs on the Semi-Global Matching algorithm are evaluated and compared using aerial image sequences and satellite images with ground truth. The influence of various cost functions on the stereo matching performance using datasets with different baseline lengths and natural radiometric changes is evaluated. A novel matching cost merging Mutual Information and Census is introduced and shows the highest robustness and accuracy. Our study indicates that using an adaptively weighted combination of Mutual Information and Census as matching cost can improve the performance of stereo matching for airborne image sequences and satellite images.

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