A NOVEL TWO-STEP STRATEGY FOR POINT CORRESPONDENCE IN MULTI-OCULAR SYSTEM

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Abstract: Camera is widely used for 3D-Reconstruction and Recognition where a fundamental task is point correspondence that finds the corresponding points captured by different cameras from the same 3D-point. The approaches based on epipolar constraint are very effective for the task. However, they set the threshold of epipolar constraint by empirical method, and their complexity and computational cost will quickly increase with increasing the number of cameras. This paper proposes a novel two-step strategy using epipolar constraint regardless of the number of cameras in a uniform way. The strategy uses a statistic method to set the threshold, and decomposes the task of point correspondence in a multi-ocular system into the task of point correspondence in several binocular systems by transitivity constraint. The experiment and theoretical analyses indicate our approach is better than existing methods on complexity and computational cost.

Index terms*: Camera, Epipolar Constraint, Point Correspondence, Multi-ocular System.*