

# **Bifocal Matching Using Multiple Geometrical Solutions**

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## **Abstract**

Determining point-to-point correspondence in multiple images is a complex problem because of the multiple geometric and photometric transformations and/or occlusions that the same point can undergo in corresponding images. This paper presents a method of point-to-point correspondence analysis based on the combination of two techniques: (1) correspondence analysis through similarity of invariant features, and (2) combination of multiple partial solutions through bifocal geometry. This method is quite novel because it allows the determination of point-to-point geometric correspondence by means of the intersection of multiple partial solutions that are weighted through the MLESAC algorithm. The main advantage of our method is the extension of the algorithms based on the correspondence of invariant descriptors, generalizing the problem of correspondence to a geometric model in multiple views. In the sequences used we got an F-score = 97% at a distance of less than 1 pixel. These results show the effectiveness of the method and potentially can be used in a wide range of applications.

## **Keywords**

Computer vision, Multiple view geometry, Correspondence problem, Tracking .