Effective Visualization of Sparse Image-to-Image Correspondences

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Finding robust correspondences between images is a crucial step in photogrammetry applications. The traditional approach to visualize sparse matches between two images is to place them side-by-side and draw link segments connecting pixels with matching features. In this paper we present new visualization techniques for sparse correspondences between image pairs. Key ingredients of our techniques include (a) the clustering of consistent matches, (b) the optimization of the image layout to minimize occlusions due to the super-imposed links, (c) a color mapping to minimize color interference among links, (d) a criterion for giving visibility priority to isolated links, (e) the bending of link segments to put apart nearby links, and (f) the use of glyphs to facilitate the identification of matching keypoints. We show that our technique substantially reduces the clutter in the final composite image and thus makes it easier to detect and inspect both inlier and outlier matches. Potential applications include the validation of image pairs in difficult setups and the visual comparison of feature detection/matching algorithms.

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