Segmentation based features for wide-baseline multi-view reconstruction

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Problem Definition
A common problem in wide-baseline stereo is the sparse and non-uniform distribution of correspondences when using conventional detectors such as SIFT, SURF, FAST and MSER for sparse and dense scene reconstruction.

Contribution
A novel segmentation based feature detector SFD that produces:
(a) Increased number of ‘good’ features for wide-baseline reconstruction;
(b) Increased scene coverage and improved accuracy;
(c) Order of magnitude increase in wide-baseline matches and reconstructed points. Matches are consistent across views.

Method and application

Evaluation and results

Conclusion
SFD evaluation on wide-baseline image pairs of indoor and outdoor scenes gives more features, matches and reconstructed points with improved accuracy compared to the existing approaches.