

Evaluations on Matching Quality for 8 Different Matching Algorithms over Various Inlier Ratios

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Abstract. In this document, we present additional results on the mean accuracy, precision, recall, and fall-out over various inlier ratios. The evaluations are performed on various datasets for SIFT features as well as FAST keypoints & FREAK descriptors.

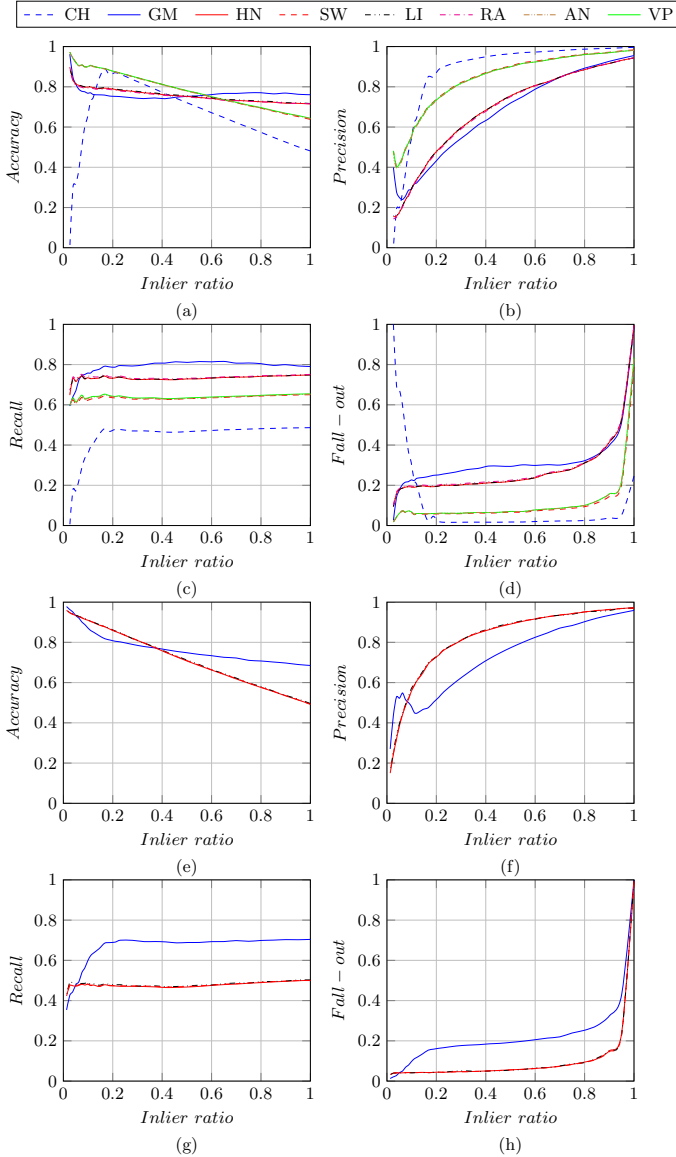


Fig. 1. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire **KITTI disparity dataset** from Menze and Geiger [1]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

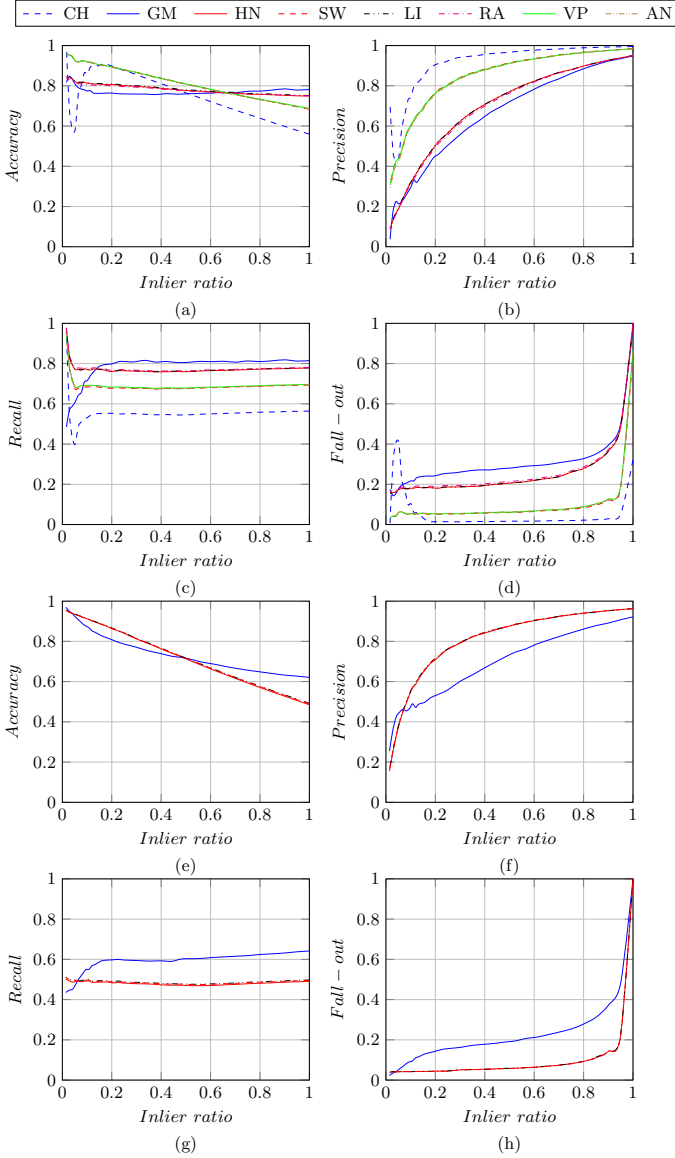


Fig. 2. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire **KITTI flow dataset** from Menze and Geiger [1]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

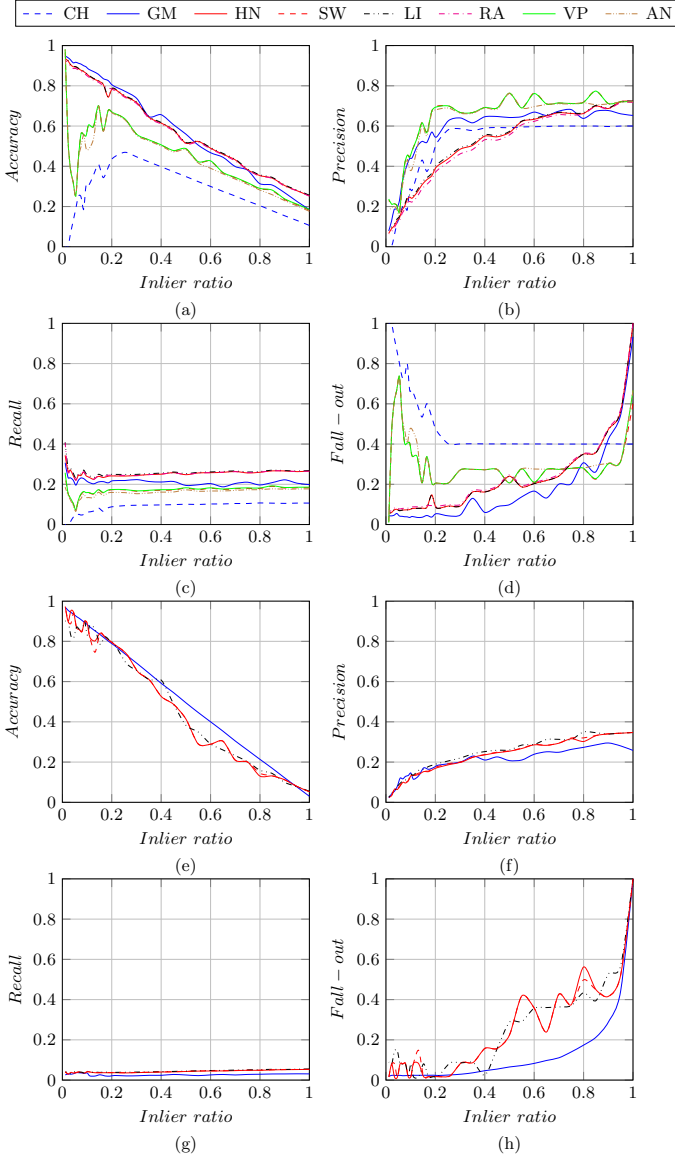


Fig. 3. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire **“bark” dataset** from Mikolajczyk *et al.* [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

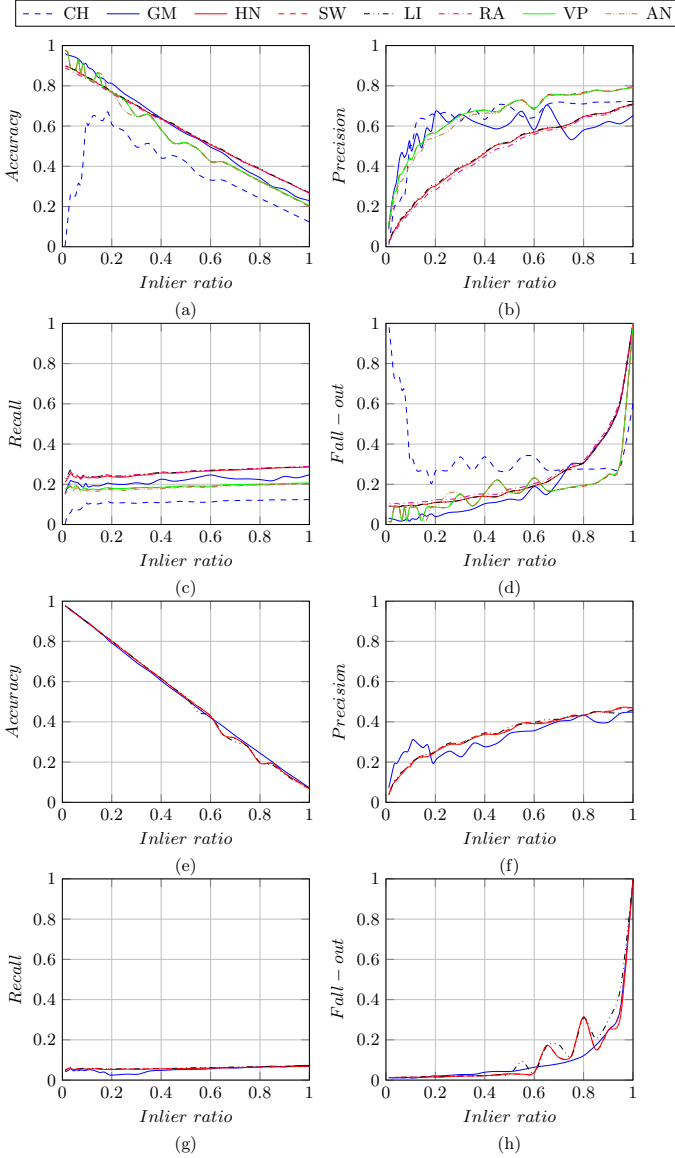


Fig. 4. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “boat” dataset from Mikolajczyk *et al.* [2,3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

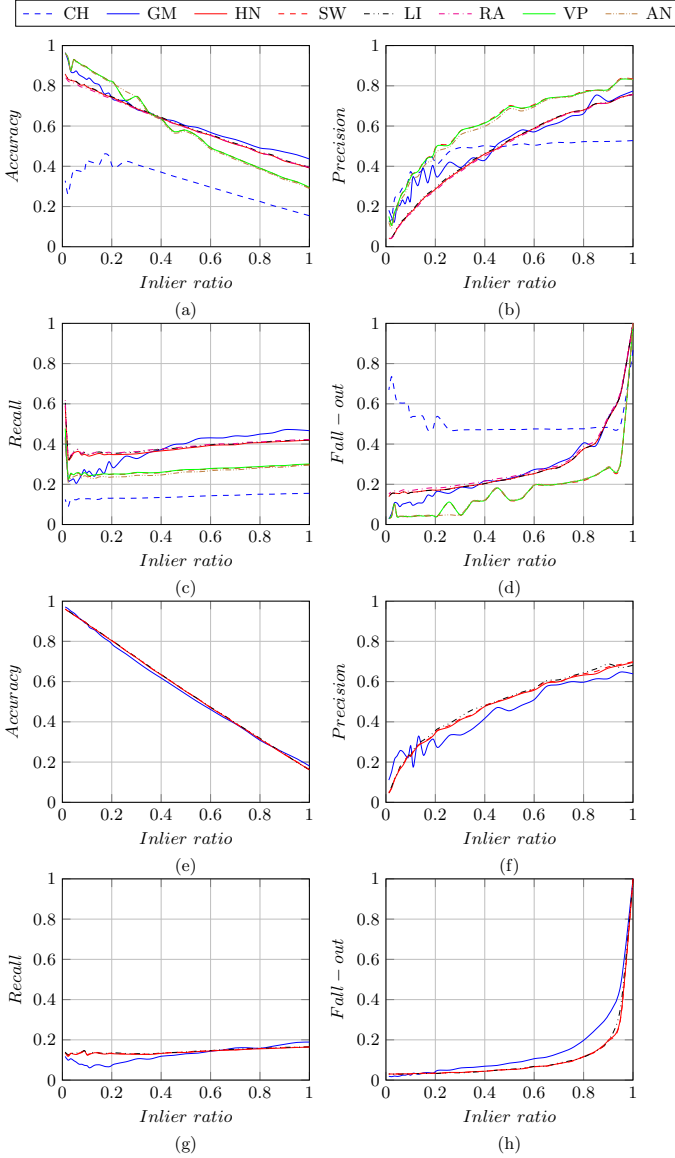


Fig. 5. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “**graffity**” dataset from Mikolajczyk *et al.* [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

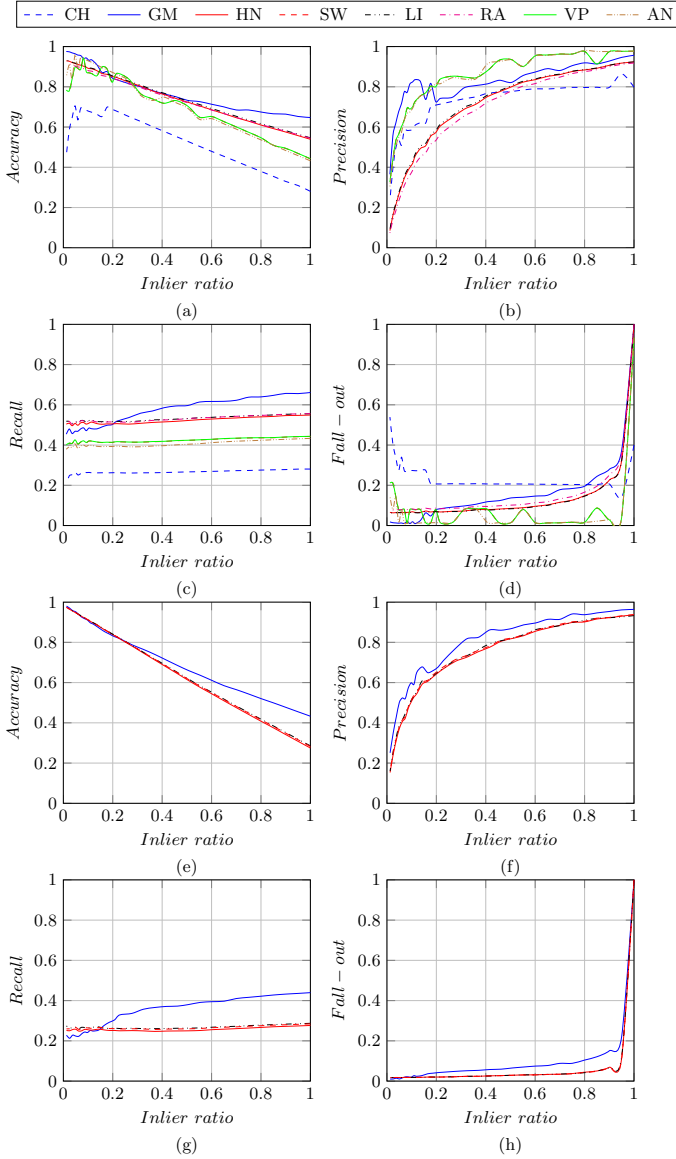


Fig. 6. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “wall” dataset from Mikolajczyk *et al.* [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from NMSLIB, linear matching (LI) from the FLANN library, Small World Graph (SW), VP-tree (VP), CasHash (CH), ANNOY (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.

References

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