

Evaluations on Processing Time for 8 Different Matching Algorithms

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Abstract. In this document, we show additional results on processing time for 8 different matching algorithms. The evaluations are performed on various datasets for SIFT features as well as FAST keypoints & FREAK descriptors.

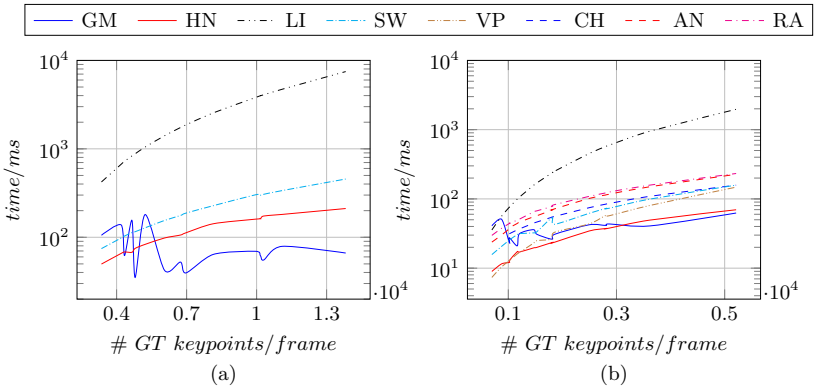


Fig. 1. Runtime analysis on the “wall” dataset from Mikolajczyk *et al.* [1, 2] using (a) FAST keypoints & FREAK descriptors and (b) SIFT features. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from the 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). Time measurements were performed using the smallest runtime of 100 runs on an Intel Xeon E5-1620 v3 3.5GHz CPU. Each datapoint stems from a different image pair with an inlier ratio of 75%.

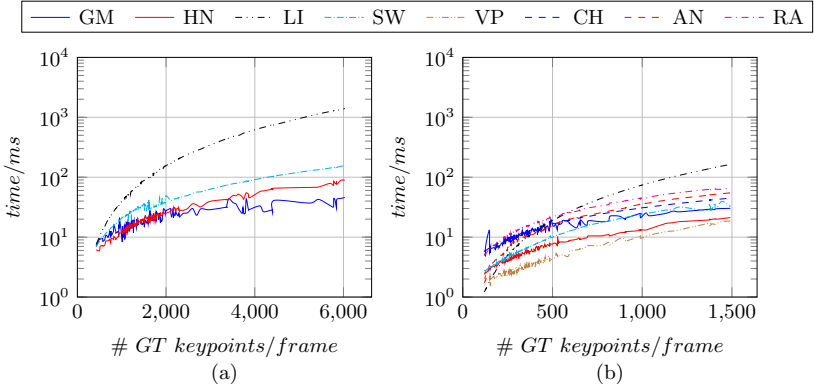


Fig. 2. Runtime analysis on the **KITTI flow dataset** from Menze and Geiger[3] using (a) FAST keypoints & FREAK descriptors and (b) SIFT features. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from the 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). Time measurements were performed using the smallest runtime of 100 runs on an Intel Xeon E5-1620 v3 3.5GHz CPU. Each datapoint stems from a different image pair with an inlier ratio of 75%.

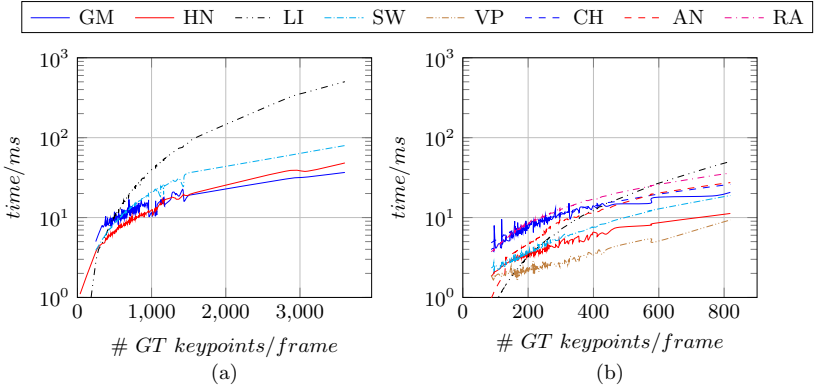


Fig. 3. Runtime analysis on the **KITTI disparity dataset** from Menze and Geiger[3] using (a) FAST keypoints & FREAK descriptors and (b) SIFT features. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), Hierarchical Navigable Small World Graph (HN) from the 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). Time measurements were performed using the smallest runtime of 100 runs on an Intel Xeon E5-1620 v3 3.5GHz CPU. Each datapoint stems from a different image pair with an inlier ratio of 75%.

References

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3. Menze, M., Geiger, A.: Object scene flow for autonomous vehicles. In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. (June 2015) 3061–3070