

Mid Term Report: Camera Based 2D Feature Tracking

MP9

Based on the time taken for Keypoints detection, and the time for descriptor extraction, number of features extracted and the number of matches between 2 successive images, I recommend the following the following Keypoints detectors and descriptor combinations:

1. FAST - BRIEF
2. FAST - BRISK
3. FAST - ORB

Fast keypoint detector is the fastest of all the keypoint detectors we're comparing, and it extracts a high number of keypoints - on average 1787 keypoints in 1.34 ms per image. The keypoints extracted are evenly spread across the region of interest (in the preceding car box). I believe that the FAST keypoint detector coupled with the fastest 3 descriptor extractors will give the fastest feature tracking for real-time 2D feature tracking.

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| 1. BRIEF | descriptor 0.56 ms/ image averaged across all keypoint detectors |
| 2. BRISK | 1.056 ms/image averaged across all keypoint detectors |
| 3. ORB | 1.6361 ms/image avg across all keypoint detectors |