

16-720B Homework 2 Write-up

Gu, Qiao

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Q1.2

Please see Figure. 1 for the DoG Pyramid of `model_chickenbroth.jpg`.



Figure 1: The DoG Pyramid of `model_chickenbroth.jpg`

Q1.5

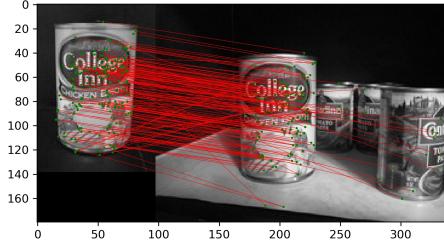
Please see Figure. 2 for the detected keypoints of `model_chickenbroth.jpg`.



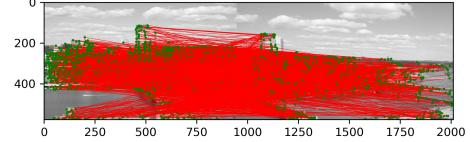
Figure 2: The detected keypoints on image `model_chickenbroth.jpg`

Q2.4

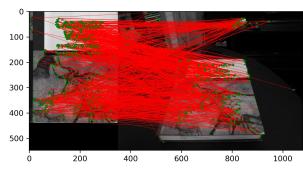
Please see Figure 3 for the matching results. From the results, we can see that if the object is rotated, the matching performance will be much worse than those with little or no rotation (compare Figure. 3 (d)(g) with Figure. 3 (c)(f)). I suspect this is because the BRIEF descriptor does not encode the patch into a rotation-invariant space and thus have poor ability to match rotated patches.



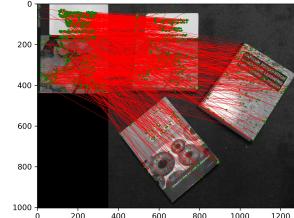
(a) match of two of the `chickenbroth` images.



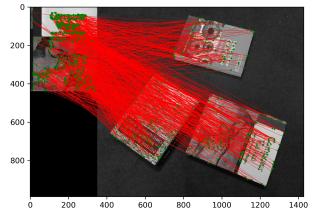
(b) match of the `incline` images.



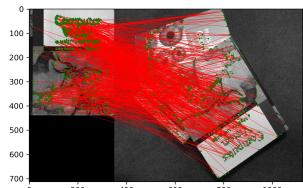
(c) match of `pf_scan_scaled.jpg` against `pf_desk.jpg`.



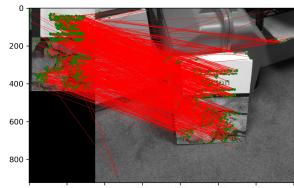
(d) match of `pf_scan_scaled.jpg` against `pf_desk.jpg`.



(e) match of `pf_scan_scaled.jpg` against `pf_floor_rot.jpg`.



(f) match of `pf_scan_scaled.jpg` against `pf_pile.jpg`.



(g) match of `pf_scan_scaled.jpg` against `pf_stand.jpg`.

Figure 3: Results of Feature Match.

Q2.5

Please see Figure 4 for the matching results.

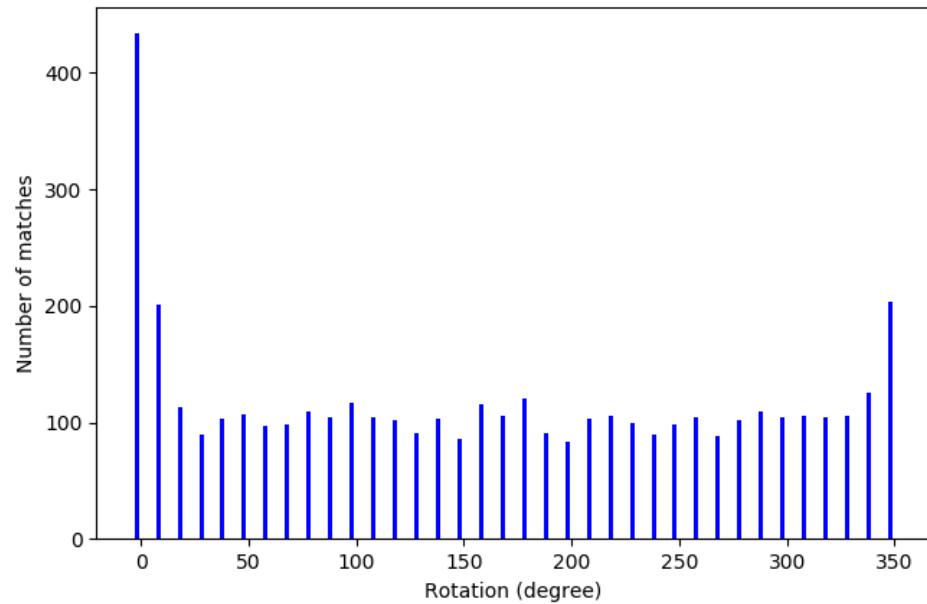


Figure 4: The rotation angle vs the number of correct matches