

## CS677: Advanced Computer Vision, Fall 2017

### Additional Information for HW3

The original statement of the assignment asked for a program to locate objects using homography and SIFT features. Link to a tutorial was provided as a guide. It was suggested to use a BF matcher instead of FLANN matcher. However, there are two variations of brute force matchers that could be used; some details can be found in:

[http://docs.opencv.org/3.0-beta/doc/py\\_tutorials/py\\_feature2d/py\\_matcher/py\\_matcher.html](http://docs.opencv.org/3.0-beta/doc/py_tutorials/py_feature2d/py_matcher/py_matcher.html) .

`bf.match` returns the best match for every input feature; if we use all of these matches, without any filtering, it is possible that homography finder will fail to find a solution. If you find that, for the given examples, this is not a problem then you can continue to use this matcher. If not, one way to resolve the problem would be to sort the matches by their scores and use only a subset.

A variation of brute force matcher is `bf.knnmatch` which returns `k` of the best matches. This information can be used to filter weak matches by requiring some ratio between the best and second matches, as is shown in both of the tutorials. After filtering, homography finder may be expected to converge faster but is not guaranteed to do so.

It is not the intention of the assignment to prescribe exact functions to be used for solving the object localization problem. Instead, links to documentation are provided to help navigate the large library of functions in OpenCV.

A final point is that the assignment asks "how well does the method work" but does not specify a way to make this judgment. Note that the main goal is to locate the objects in the given images. We could transform the entire object image and overlay on the target image, using the computed homography, but this is not asked for. It will suffice to make your judgment based on results of feature matching (after homography computation).