Exercises – Local features

1. Extracting local features

a) Read the images feup1.png and feup2.png in grayscale;
b) Create a FAST feature detector using the `FastFeatureDetector` class;
c) Detect the keypoints using this feature detector;
d) Show the extracted keypoints, using the `drawKeypoints` function, and analyse the results;
e) Compare these results with the ones obtained with the SIFT feature detector. Note: if your OpenCV version does not support SIFT, try other detectors (e.g. KAZE detector).

2. Matching local features

a) Study the functions already available in the initial file (`objdetection.cpp` or `objdetection.py`);
b) Open the test image (`poster_test.jpg`) and extract the local descriptors using the detector object;
c) Open the other images (`posterX.jpg`) and for each extract the local descriptors and match them with the descriptors form the test image using the matcher object;
d) Show the matches using the `showResult` function and interpret the results.
e) Show the matches after filtering with the `filterMatchesByDistance` and interpret the results.
f) Show the matches after filtering with the `filterMatchesRANSAC` (after the absolute value filter) and interpret the results.

These exercises were implemented and tested using OpenCV 3.4.3. The "Feature Detection" and "Feature Description" tutorials contain helpful code examples:
https://docs.opencv.org/3.4.3/d9/d97/tutorial_table_of_content_features2d.html