INF 5300 – Lab exercises on feature detection for matching

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- Detecting keypoints using various strategies
- Exploring SIFT
- Exploring Gradient orientation histogram features
- Exploring multiscale DOG filters

Keypoint detection exercise

- Implement a few keypoint detectors and compare their performance.
- Select e.g. the following detectors:
  - Smallest eigenvalue
  - Harris-detector
  - Laplacian or Difference of Gaussians
- Compare which features they detect in different images from ~inf5300/www_docs/data

SIFT –

- It might take too long to implement the entire SIFT algoritm yourself, but try it if you have time.
- A good SIFT-demo in matlab can be found at http://www.vlfeat.org/overview/sift.html
- The VL-FEAT tutorial http://www.vlfeat.org/overview/covdet.html allow you to test different keypoint detection algorithms.
  This library should be available õn~inf5300/www_docs/data/vlfeat after addpath('/ifi/asgard/k00/inf5300/inf5300/www_docs/data/vlfeat') (or the corresponding windows path).
- Experiment with the different parameters on see which types of features they detect on the image ~inf5300/www_docs/data/scene1.jpg and scene1_view2.jpg
- Get experience with how the gradient histogram features work using the tutorial http://www.vlfeat.org/overview/hog.html
- Finally, experiment with the full SIFT implementation, including matching two different scenes, using the SIFT tutorial http://www.vlfeat.org/overview/sift.html