

CSCI 4830/5722 Computer Vision – Fall 2016  
Instructor: Fleming  
FINAL PROJECT  
Due Sunday, December 4<sup>th</sup>, by 11:55pm

**Final Project topics: links to data and possible interesting papers**

1. Caltech-101/Caltech-256:

[http://www.vision.caltech.edu/Image\\_Datasets/Caltech101/Caltech101.html](http://www.vision.caltech.edu/Image_Datasets/Caltech101/Caltech101.html)

- ▶ object class recognition
- ▶ object localization

2. Many, many, many datasets for various purposes on the Oxford website:

<http://www.robots.ox.ac.uk/~vgg/data/>

Buffy stickmen

<http://www.robots.ox.ac.uk/~vgg/data/stickmen/>

- ▶ human pose recognition
- ▶ gender recognition
- ▶ Buffy identification

Text recognition data set (for Ryan, for example)

<http://www.robots.ox.ac.uk/~vgg/data/text/>

- ▶ character recognition
- Warning! 9 million images, 90k + words

3. RGB-D Object Dataset

[www.cs.washington.edu/rgbd-dataset/](http://www.cs.washington.edu/rgbd-dataset/)

- ▶ Object instance retrieval
- ▶ Object category classification

4. RGB-D Indoor Scenes Dataset

<http://cs.nyu.edu/~silberman/datasets/>

- ▶ Scene classification
- ▶ Object detection, recognition, segmentation

5. UK Bench

[www.vis.uky.edu/~stewe/ukbench/](http://www.vis.uky.edu/~stewe/ukbench/)

- ▶ Object instance retrieval

6. Stereo data sets and evaluation of many stereo algorithms

<http://vision.middlebury.edu/stereo/>

Various algorithms and papers:

Bag of Words:

G. Csurka, C. Bray, C. Dance, and L. Fan. *Visual categorization with bags of keypoints*. In Workshop on Statistical Learning in Computer Vision (ECCV), 2004.

<https://people.eecs.berkeley.edu/~efros/courses/AP06/Papers/csurka-eccv-04.pdf>

Histograms of Oriented Gradients (HOG):

N. Dalal and B. Triggs. *Histograms of Oriented Gradients for Human Detection*. In CVPR, 2005

<https://lear.inrialpes.fr/people/triggs/pubs/Dalal-cvpr05.pdf>

Vocabulary Trees:

D. Nister and H. Stewenius. *Scalable recognition with a vocabulary tree*. In IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2006. (on Moodle)

[http://www-inst.eecs.berkeley.edu/~cs294-6/fa06/papers/nister\\_stewenius\\_cvpr2006.pdf](http://www-inst.eecs.berkeley.edu/~cs294-6/fa06/papers/nister_stewenius_cvpr2006.pdf)

Implicit Shape Model:

B. Leibe, A. Leonardis, B. Schiele. *Robust Object Detection with Interleaved Categorization and Segmentation*. In Special Issue on Learning for Recognition and Recognition for Learning (IJCV), 2008.

<http://www.cs.huji.ac.il/~daphna/course/CoursePapers/leibe-interleaved-ijcv07final.pdf>

Face detection: Viola Jones algorithm

<https://www.cs.cmu.edu/~efros/courses/LBMV07/Papers/viola-cvpr-01.pdf>

3D human pose estimation papers (for Chance, for example for anything using depth maps, kinect)

<https://www.microsoft.com/en-us/research/publication/real-time-human-pose-recognition-in-parts-from-a-single-depth-image/>

<http://people.csail.mit.edu/rywang/handtracking/>

Also in the same topic: optical flow algorithm Lucas-Kanade, and revisited:

<http://cseweb.ucsd.edu/classes/sp02/cse252/lucaskanade81.pdf>

[https://en.wikipedia.org/wiki/Optical\\_flow](https://en.wikipedia.org/wiki/Optical_flow) (best link to understand optical flow)

[http://faculty.cs.tamu.edu/jchai/CPSC641/baker\\_simon\\_2004\\_1.pdf](http://faculty.cs.tamu.edu/jchai/CPSC641/baker_simon_2004_1.pdf)

Graph cuts algorithms:

<http://www.cs.cornell.edu/People/vnk/recon.html>

, especially for *Computing Visual Correspondence with Occlusions using Graph Cuts*.

<https://www.cs.cornell.edu/rdz/Papers/KZ-ICCV01-tr.pdf>