Pose specific part classifiers: Poselets beyond people

Definition of subcategories
- boat, sailboat, ocean liner, motorboat
- airplane, propeller plane, jet, military aircraft
- bird, flying bird, non-flying bird

Separate definition of keypoints and separate classifiers for each subcategory.

Keypoints for symmetric objects
- Bottles and potted plants (among others)

Keypoint annotation
- Segmentation

Annotation with Amazon Mechanical Turk
- Annotation of the complete PASCAL VOC training set within 2 weeks and for about $3000.

Annotation of possible PASCAL VOC training set
- 6 more hypotheses (out of 20)

Object Segmentation by Alignment of Poselet Activations to Image Contours

Bourdev et al. ECCV 2010.

Alignment to image contours
- Extract contour from the poselet's average mask
- Extract image edges with UCM (Arbelaez et al. PAMI 2011)
- Align poselet to the image edges with variational optical flow

Summation of all aligned contours for the two highest ranked hypotheses

Removing false positive hypotheses
- Thresholding after normalization keeps only hypotheses with high scores. This also removes local areas with a low score.

Creating spatially consistent segmentations by joint variational smoothing
- Competitive spatial integration
- Patch based refinement

Texture similarity defined by 7x7 image patches.

Removing false positive hypotheses
- Remaining hypotheses before variational smoothing
- Remaining hypotheses after variational smoothing
- Zero level sets

Segmentation results on Pascal datasets
- Comparison to state-of-the-art, VOC 2010 dataset

Patch based refinement
- Texture similarity defined by 7x7 image patches. Each pixel in a UCM supervoxel votes for a label based on the majority label among its 100 nearest neighbors.