CUB (Caltech-UCSD Birds-200-2011) dataset description

General information

CUB-200-2011 is an extended version of the CUB-200 dataset (CUB-200, as example, contains half as many images). The dataset has an unique properties: subordinate category recognition, multi-class object detection, attribute-based methods, crowdsourcing and user studies.

The authors (Catherine Wah, Steve Branson, Peter Welinder, Pietro Perona, Serge Belongie) introduce a set of benchmarks and baseline experiments for studying bird species categorization, detection, and part localization:

Localized Species Categorization. Given the ground truth part locations, assign each image to one of 200 bird classes.

Part Localization. Given the full, uncropped bird images, predict the location and visibility of each bird part.

Species Categorization/Detection. Using only the full, uncropped bird images, assign each image to one of 200 bird classes.

Attention! Authors warn that images in this dataset overlap with images in ImageNet. Exercise caution when using networks pretrained with ImageNet (or any network pretrained with images from Flickr) as the test set of CUB may overlap with the training set of the original network.

The dataset page

http://www.vision.caltech.edu/visipedia/CUB-200-2011.html

View the dataset

http://www.vision.caltech.edu/visipedia-data/CUB-200-2011/browse/index.html

Details

The dataset contains about 200 classes, 11,788 images and class labels, 312 binary attributes.

All images are of different sizes and all images are marked (bounding box + 15 part locations – for example, left eye, right eye, forehead, etc.).

Classes in the dataset hasn't division into "seen" and "unseen".

Structure of the dataset

The dataset is divided into two separate folders. In the first – *segmented photos*, in the other – *all images and annotations*.

Folder «Segmentations»

The folder «Segmentations» has 200 subfolders (respectively for each bird) with segmented photos.

Subfolder name: 00x.kind_of_bird

Example: 001.Black_footed_Albatross

Folder «CUB-200-2011»

The main folder «CUB-200-2011» has subfolders – *attributes, images, parts.*

Subfolder «Parts»: has text files part_clicks_locs.txt, part_locs.txt, parts.txt. These files include data, identifying parts of the bodies of birds, which isn't required for the task in the project

Subfolder «Attributes» (for parts): has three text files: certainties.txt, image_attribute_labels.txt, class_attribute_labels_continious.txt. Isn't required for the task in the project

Subfolder «Images»: has 200 folders with images of each bird. Folder names are the same as subfolder names in «Segmentations»

In addition, in the main folder there are several text files:

1. The list of image file names is contained in the file *images.txt*, with each line corresponding to one image: <image_id> <image_name>

2. The suggested train/test split is contained in the file *train_test_split.txt*, with each line corresponding to one image: <image_id> <is_training_image>

3. The list of class names (bird species) is contained in the file *classes.txt*, with each line corresponding to one class: <class_id> <class_name>

4. The ground truth class labels (bird species labels) for each image are contained in the file *image_class_labels.txt*, with each line corresponding to one image: <image_id> <class_id>

5. Each image, as mentioned in section «Details», contains a single bounding box label. Bounding box labels are contained in the file *bounding_boxes.txt*, with each line corresponding to one image: <image_id> <x> <y> <width> <height>, where <image_id> corresponds to the ID in images.txt, and <x>, <y>, <width>, and <height> are all measured in pixels

Example

For example, consider the one of Scarlet Tanager's photo from this dataset:

Image name: Scarlet_Tanager_0086_138272.jpg

Some of attribute labels:

Has_Breast_Pattern: Solid (definitely, 2.4410sec)	Has_Back_Color: Red (definitely, 3.1130sec)
Has_Tail_Shape: (not visible, 2.8420sec)	Has_Upper_Tail: Color_Red (probably, 6.7530sec)
Has_Head_Pattern: Plain Eyeline (definitely, 24.4490sec)	Has_Breast_Color: Red (definitely, 2.3130sec)

How to download

To download a dataset, you need to go to the dataset website (See the link under the heading «The dataset page») and download the segmented data (37 MB) and, accordingly, the source data with the attributes (1,1 GB) via links.