

## 实验 3 语义分割标注结果转换成 PascalVOC 和 COCO 格式

实验难度：一般

实验摘要：很多语义分割类模型是通过 PASCAL VOC 数据集或者 MS COCO 数据集进行模型训练的，因此，把标注数据集转换成 VOC 数据集和 COCO 数据集格式，能够减少很多数据准备的工作。labelme 提供了方便的脚本，可以把数据标注结果直接转成 VOC 的格式和 MS COCO 格式。

实验建议：了解数据标注的基本格式

实验目标：能够使用脚本工具将语义分割标注结果转换成 PascalVOC 和 COCO 格式。

### 实验3 语义分割标注结果转换成PascalVOC和COCO格式

#### 1、语义分割标注结果转换成 PascalVOC 和 COCO 格式

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##### 1.1、格式转换成 Pascal VOC 格式

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可以利用 labelme 提供的脚本工具，方便的把标注出来的 json 文件进行转换。分割任务转换脚本和上一个任务中使用的脚本略有不同。需要重新下载，下载路径为：

[https://github.com/wkentaro/labelme/blob/master/examples/semantic\\_segmentation/labelme2voc.py](https://github.com/wkentaro/labelme/blob/master/examples/semantic_segmentation/labelme2voc.py)

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把语义分割标注的结果和这个脚本 labelme2voc.py 放到同一个目录下。输入如下命令：

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```
./labelme2voc.py data data_voc --labels labels.txt
```

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可以将 data 目录下的标注结果进行转换，并放到 data\_voc 目录下。

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## 1.2、查看 Pascal VOC 格式的文件

在生成的 `data_voc` 目录中，获得的目录结构如下：

```
data_voc
```

```
- data_voc/class_names.txt
```

```
- data_voc/JPEGImages
```

```
- data_voc/SegmentationClass
```

```
- data_voc/SegmentationClassPNG
```

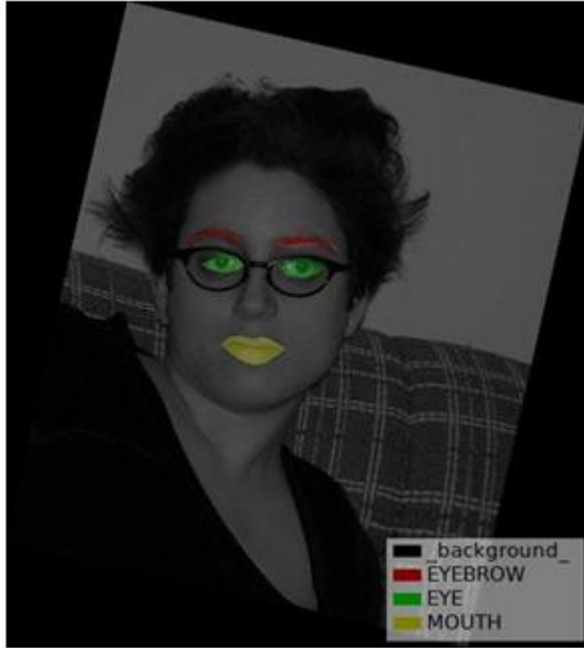
```
- data_voc/SegmentationClassVisualization
```

其中 `SegmentationClass` 目录下保存的是 `numpy` 格式的标注信息，其中保存的 `numpy` 数组和原图同样大小，每个元素的值代表和对应像素点属于的类别。因此可以表示像素级别的图像分割结果。

`SegmentationClassPNG` 目录下保存的图像分割的可视化结果。



`SegmentationClassVisualization` 下是原始图像和标注图像的累加可视化效果。



### 1.3、格式转换成 COCO 格式

labelme 也提供的脚本工具,把标注出来的 json 文件进行转换成 coco 数据集格式。同样,需要先下载脚本

[https://github.com/wkentaro/labelme/blob/master/examples/instance\\_segmentation/labelme2coco.py](https://github.com/wkentaro/labelme/blob/master/examples/instance_segmentation/labelme2coco.py)

同样把语义分割标注的结果,和下载的脚本 labelme2coco.py 工具放到同一个目录下。输入如下命令:

```
./labelme2coco.py d**a d***_***o --l*****s l*****.**t
```

可以将 data 目录下的标注结果进行转换,并放到 data\_coco 目录下。使用和标注是同样的 labels.txt 文件。

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### 1.4、查看转换后的结果

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在生成的 data\_coco 目录下,目录结构如下: data\_coco

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data\_coco

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- 

- `- data_coco/annotations.json`

---

- 

- `- data_coco/JPEGImages`

---

- 

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其中 annotations.json 保存的是所有图像的标注结果，是符合 COCO 数据集标注格式的 json 文件。JPEGImages 目录下保存的是原始图像。

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可以查看一下这个 json 文件

---

- 

- `{`

---

- 

---

- 

- `"info": {`

---

- 

---

- 

- `"description": null,`

---

- 

---

- 

- `"url": null,`

---

-

---

- 

- "version": null,

---

- 

---

- 

- "year": 2020,

---

- 

---

- 

- "contributor": null,

---

- 

---

- 

- "date\_created": "2020-06-04 15:37:45.533493"

---

- 

---

- 

- },

---

- 

---

- 

- "licenses": [{

---

- 

---

-

"url": null,

---

•

---

•

"id": 0,

---

•

---

•

"name": null

---

•

---

•

}],

---

•

---

•

"images": [{

---

•

---

•

"license": 0,

---

•

---

•

"url": null,

---

- 

---

- 

"file\_name": "JPEGImages/10405146\_1.jpg",

---

- 

---

- 

"height": 352,

---

- 

---

- 

"width": 234,

---

- 

---

- 

"date\_captured": null,

---

- 

---

- 

"id": 0

---

- 

---

- 

}, {

---

-

---

- 

"license": 0,

---

- 

---

- 

"url": null,

---

- 

---

- 

"file\_name": "JPEGImages/1629243\_1.jpg",

---

- 

---

- 

"height": 484,

---

- 

---

- 

"width": 438,

---

- 

---

- 

"date\_captured": null,

---

- 

---

- 

"id": 1



---

- 

---

- 

- }, {

---

- 

---

- 

- "license": 0,

---

- 

---

- 

- "url": null,

---

- 

---

- 

- "file\_name": "JPEGImages/1691766\_1.jpg",

---

- 

---

- 

- "height": 482,

---

- 

---

- 

- "width": 350,

---

-

---

- 

"date\_captured": null,

---

- 

---

- 

"id": 2

---

- 

---

- 

}},

---

- 

---

- 

"type": "instances",

---

- 

---

- 

"annotations": [{

---

- 

---

- 

"id": 0,

---

- 

---

- 

"image\_id": 0,

---

- 

---

- 

"category\_id": 1,

---

- 

---

- 

"segmentation": [

---

- 

---

- 

[119.58990536277602, 103.78548895899054, 125.26813880126184, 95.5  
8359621451105, 133.78548895899053, 90.53627760252367, 141.3564668769716,  
87.38170347003155, 146.0883280757098, 87.69716088328076, 140.4100946372  
2398, 93.69085173501577, 132.20820189274448, 97.47634069400631]

---

- 

---

- 

],

---

- 

---

- 

"area": 141.0,

---

-

---

•

"bbox": [119.0, 87.0, 28.0, 17.0],

---

•

---

•

"iscrowd": 0

---

•

---

•

}

---

•

---

•

.....

---

•

---

•

"categories": [{

---

•

---

•

"supercategory": null,

---

•

---

•

"id": 0,

---

- 

---

- 

"name": "\_background\_"

---

- 

---

- 

}, {

---

- 

---

- 

"supercategory": null,

---

- 

---

- 

"id": 1,

---

- 

---

- 

"name": "EYEBROW"

---

- 

---

- 

}, {

---

-

---

- 

"supercategory": null,

---

- 

---

- 

"id": 2,

---

- 

---

- 

"name": "EYE"

---

- 

---

- 

}, {

---

- 

---

- 

"supercategory": null,

---

- 

---

- 

"id": 3,

---

- 

---

- 

"name": "MOUTH"

---

- 

---

- 

```
    ]
```

---

- 

---

- 

```
  }
```

---

- 

这里看到, json 文件和 COCO 数据集标注的基本结构一致。

---

- 

```
{
```

---

- 

```
  "info": info,
```

---

- 

```
  "licenses": [license],
```

---

- 

```
  "images": [image],
```

---

- 

```
  "annotations": [annotation],
```

---

- 

```
  "categories": [category]
```

---

- 

```
}
```

下一步

The screenshot displays a web browser interface for a lab environment. The browser tabs include '实验平台' and '1.2. 格式转换成Pas...'. The address bar shows the URL: `http://lab.zhituxueyuan.com/client/test/index/a391cc7d45c743808198c0bb8a43b682/898bd2d44970341!`. The page title is '正在实验: 标注文件格式转换'. The main content area is divided into two panes: '实验步骤' (Experiment Steps) and 'lab' (Terminal/Desktop View).

**实验步骤 (Experiment Steps):**

- 实验3 语义分割标注结果转换成PascalVOC和COCO格式
- 实验1 分类标注结果转换
- 实验2 目标检测标注结果转换成PascalVOC格式
- 实验3 语义分割标注结果转换成PascalVOC和COCO格式

The selected step (实验3) contains the following instructions:

和上一个任务中使用的脚本略有不同。需要重新下载，下载路径为：[https://github.com/wkentaro/labelme/blob/master/examples/semantic\\_segmentation/labelme2voc.py](https://github.com/wkentaro/labelme/blob/master/examples/semantic_segmentation/labelme2voc.py)

把语义分割标注的结果和这个脚本labelme2voc.py放到同一个目录下，输入如下命令：

```
./labelme2voc.py data data_voc --labels labels.txt
```

可以将data目录下的标注结果进行转换，并放到data\_voc目录下。

1.2. 查看Pascal VOC格式的文件

在生成的data\_voc目录中，获得的目录结构如下：

```
data_voc
- data_voc/class_names.txt
- data_voc/JPEGImages
```

**lab (Terminal/Desktop View):**

The 'lab' pane shows a desktop environment with a blue background, a search icon, and a system tray. The system tray displays '35%' and '5K/s'. The desktop has several icons including 'Firefox', 'Konsole', 'nautilus', 'nmap', 'Jupyter Notebook', 'Google Chrome', and 'HOME ZLD'. The taskbar at the bottom shows various application icons and the system clock indicating '19:24 2020/8/12'.