

# Result Analysis

## First Train

### Train set details

328 with background removal + rotation +blackregions removal

```

)
[10/06 16:56:00 d2.data.datasets.coco]: Loaded 328 images in COCO format from /home/iovision/Documents/dataset/PH_train2/
coco_train5.blended.json
[10/06 16:56:00 d2.data.build]: Removed 0 images with no usable annotations. 328 images left.
[10/06 16:56:00 d2.data.build]: Distribution of instances among all 6 categories:
category | #instances | category | #instances | category | #instances |
:-----: | :-----: | :-----: | :-----: | :-----: | :-----:
cycloff | 24 | bibron | 60 | cortéma | 52
laroche_posay | 108 | soulagel | 60 | sucette | 24
total | 328 | | | | |
[10/06 16:56:00 d2.data.build]: Using training sampler TrainingSampler
[10/06 16:56:00 d2.data.common]: Serializing 328 elements to byte tensors and concatenating them all ...
[10/06 16:56:00 d2.data.common]: Serialized dataset takes 0.08 MiB

```

### Test set details

```

[10/13 05:56:32 d2.data.build]: Distribution of instances among all 6 categories:
category | #instances | category | #instances | category | #instances |
:-----: | :-----: | :-----: | :-----: | :-----: | :-----:
cycloff | 4 | bibron | 10 | cortéma | 8
laroche_posay | 18 | soulagel | 10 | sucette | 4
total | 54 | | | | |

```

## RESULT

With img size of 800 \* 800

```

Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.689
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.861
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.797
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.689
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.710
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.715
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.715
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.715
[10/07 12:46:54 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP | AP50 | AP75 | APs | APM | AP |
|-----|-----|-----|-----|-----|-----|
| 68.945 | 86.071 | 79.711 | nan | nan | 68.945 |
[10/07 12:46:54 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and
is shown as NaN.
[10/07 12:46:54 d2.evaluation.coco_evaluation]: Per-category bbox AP:
category | AP | category | AP | category | AP |
:-----: | :-----: | :-----: | :-----: | :-----: | :-----:
cycloff | 74.816 | bibron | 82.195 | cortéma | 36.536
laroche_posay | 84.266 | soulagel | 64.252 | sucette | 71.602

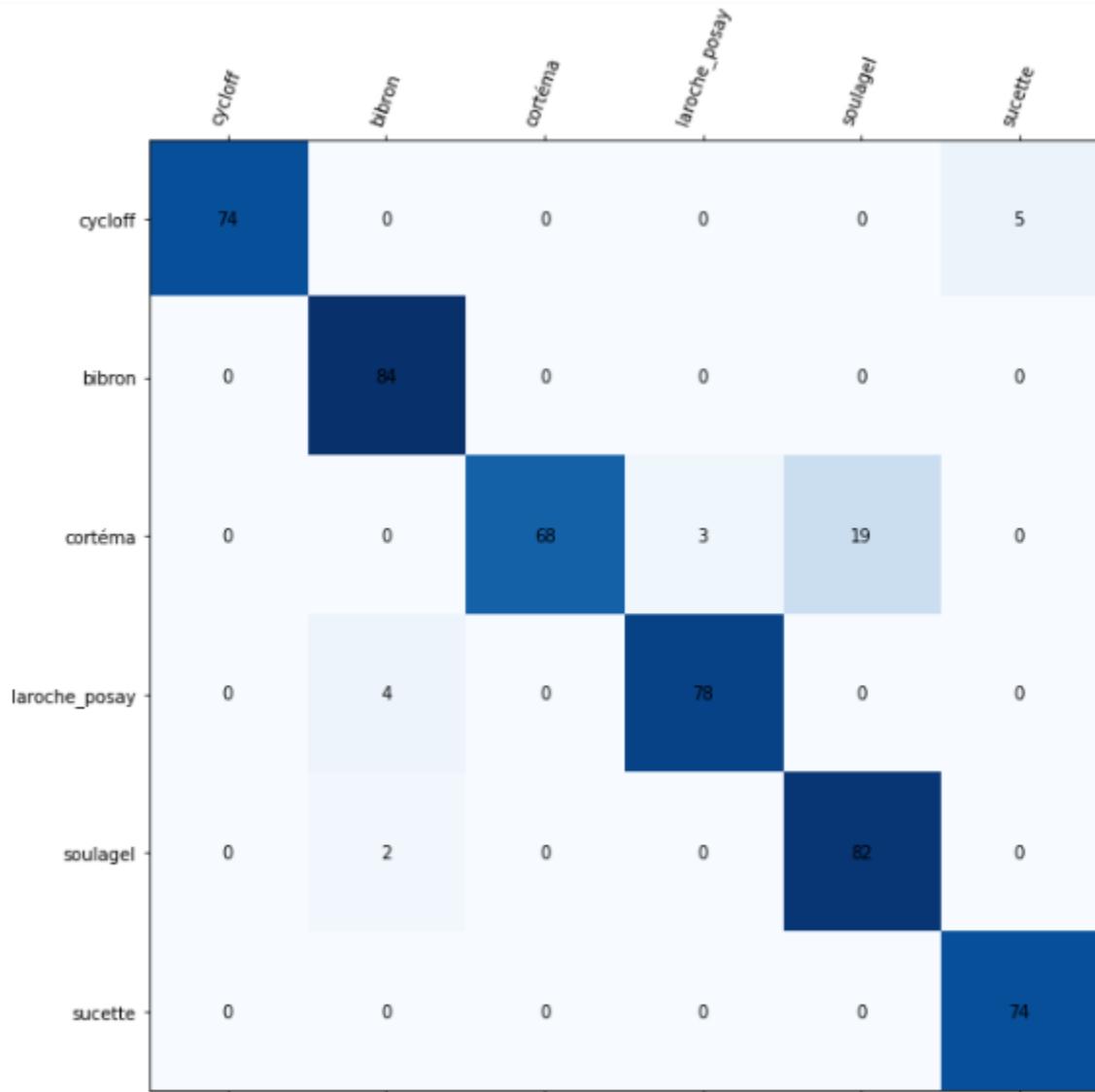
```

best model in fold is model\_0005247.pth with AP50 = 86.07065416686595

{'AP': 68.94477880355042,  
'AP50': 86.07065416686595,  
'AP75': 79.71097057945961,  
'APs': nan,  
'APm': nan,

```
'API': 68.94477880355042,
'AP-cycloff': 74.81600660066007,
'AP-bibron': 82.19531196817161,
'AP-cortéma': 36.53642149929278,
'AP-laroche_posay': 84.26640899665134,
'AP-soulagel': 64.25215130208673,
'AP-sucette': 71.60237245444002}
```

**Confusion Matrix of old model 328img (first training)**



## Second Training

### Augmented second Train set details :

5679 imgs augmented by background removal, rotation , translation, and black region removal

```
detectron2.data.print_instances_class_histogram(dict_train, train_metadata.thing_classes)

[10/12 07:16:20 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|-----:|-----:|-----:|-----:|-----:|-----:|
| cycloff | 540 | bibron | 1360 | cortéma | 827 |
| laroche_posay | 1108 | soulagel | 1310 | sucette | 534 |
| total | 5679 | | | | |
```

### Second augmented test set details

```
detectron2.data.print_instances_class_histogram(dataset_test_dicts, test_metadata.thing_classes)

[10/12 21:56:57 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|-----:|-----:|-----:|-----:|-----:|-----:|
| cycloff | 74 | bibron | 85 | cortéma | 68 |
| laroche_posay | 78 | soulagel | 85 | sucette | 74 |
| total | 464 | | | | |
```

## Results

with thresh = 0.5 best model in fold is model\_0012459.pth AP50 = 27.830180682319277

AP	AP50	AP75	APs	APm	APl
21.478	27.289	24.021	nan	nan	21.478

[10/13 13:03:17 d2.evaluation.coco\_evaluation]: Some metrics cannot be computed and is shown as NaN.

[10/13 13:03:17 d2.evaluation.coco\_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
cycloff	48.772	bibron	0.755	cortéma	17.241
laroche_posay	20.678	soulagel	8.915	sucette	32.510

OrderedDict([('bbox', {'AP': 21.478, 'AP50': 27.289, 'AP75': 24.021, 'APs': nan, 'APm': nan, 'APl': 21.478})])

[10/17 12:41:15 d2.evaluation.coco\_evaluation]: Evaluation results for bbox:

AP	AP50	AP75	APs	APm	APl
21.890	27.830	24.508	nan	nan	21.890

[10/17 12:41:15 d2.evaluation.coco\_evaluation]: Some metrics cannot be computed and is shown as NaN.

[10/17 12:41:15 d2.evaluation.coco\_evaluation]: Per-category bbox AP:

category	AP	category	AP	category	AP
cycloff	49.709	bibron	0.809	cortéma	17.241
laroche_posay	20.678	soulagel	8.915	sucette	33.987

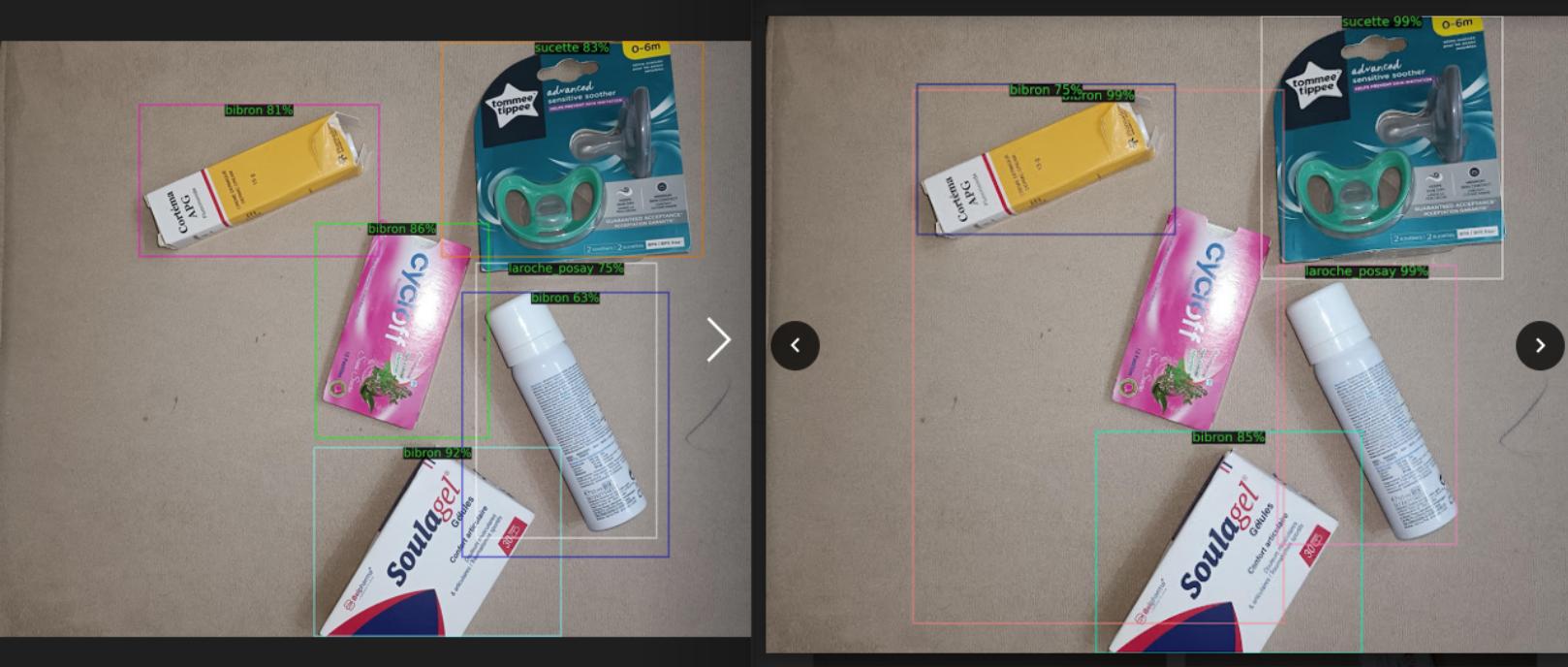
OrderedDict([('bbox', {'AP': 21.89, 'AP50': 27.83, 'AP75': 24.508, 'APs': nan, 'APm': nan, 'APl': 21.89}), ('AP50', 27.830180682319277), ('AP75', 24.50819175845772)])

Thresh = 0.5

### Visual predictions

**two predictions :**

- **on top left :** old model of friday trained on 328 imgs aumented by background removal + rotation +blackregions removal
- **on top right :** model of yesterday trained on 5679 imgs augmented by background removal, rotation , translation, and black region removal

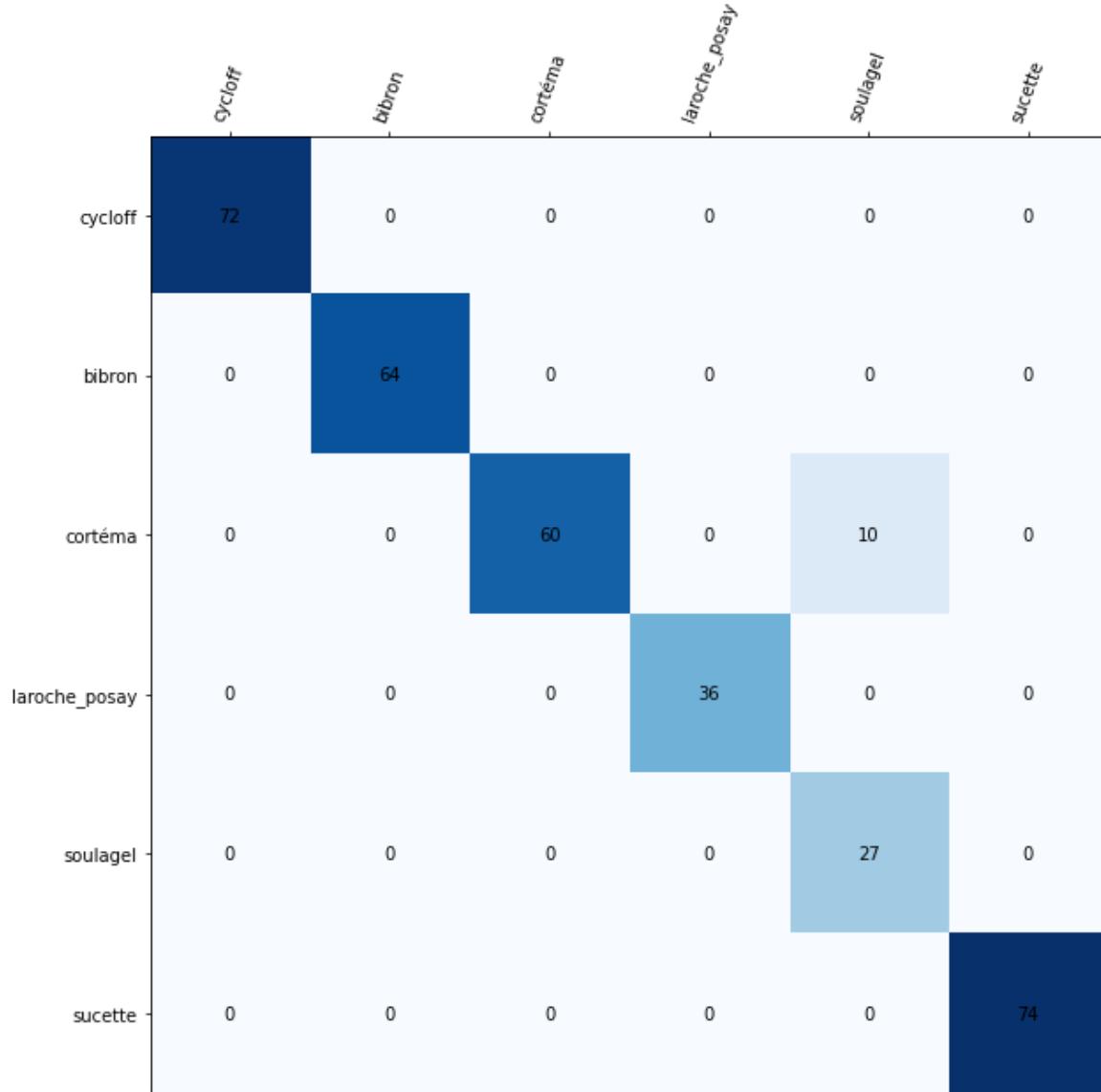




### Confusion Matrix

Case of one class predicted

Confusion Matrix

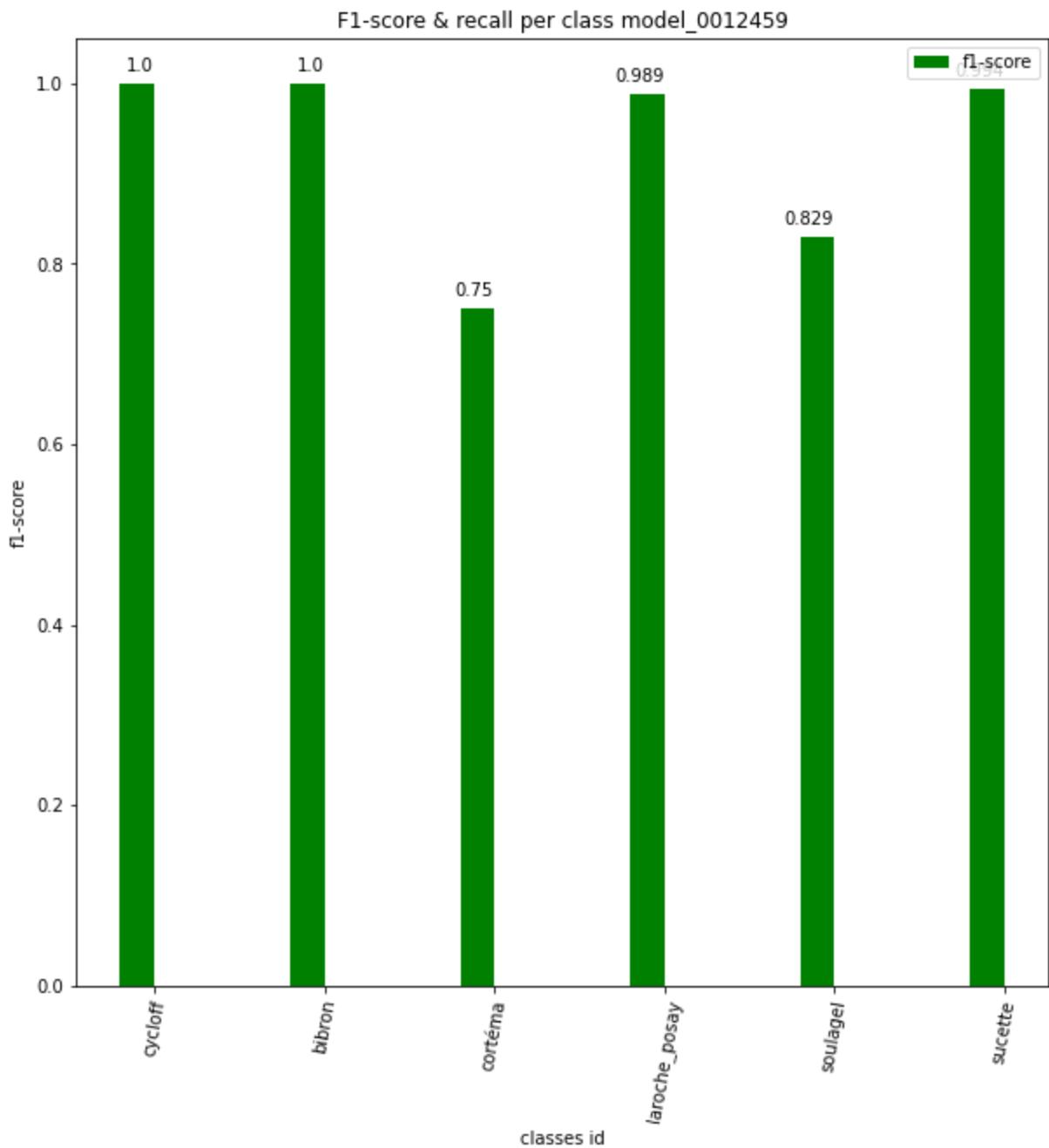


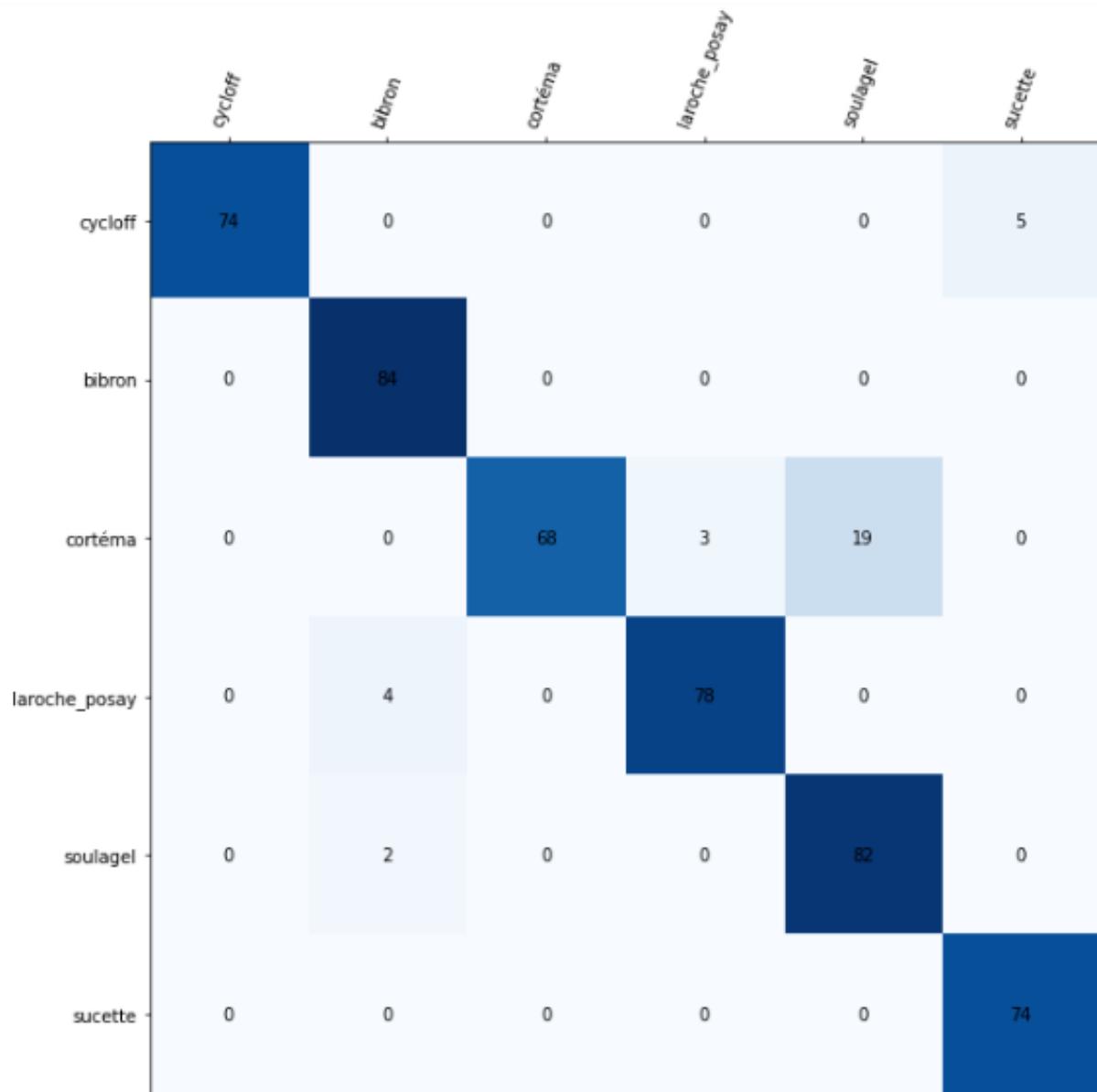
Case of more than one class predicted

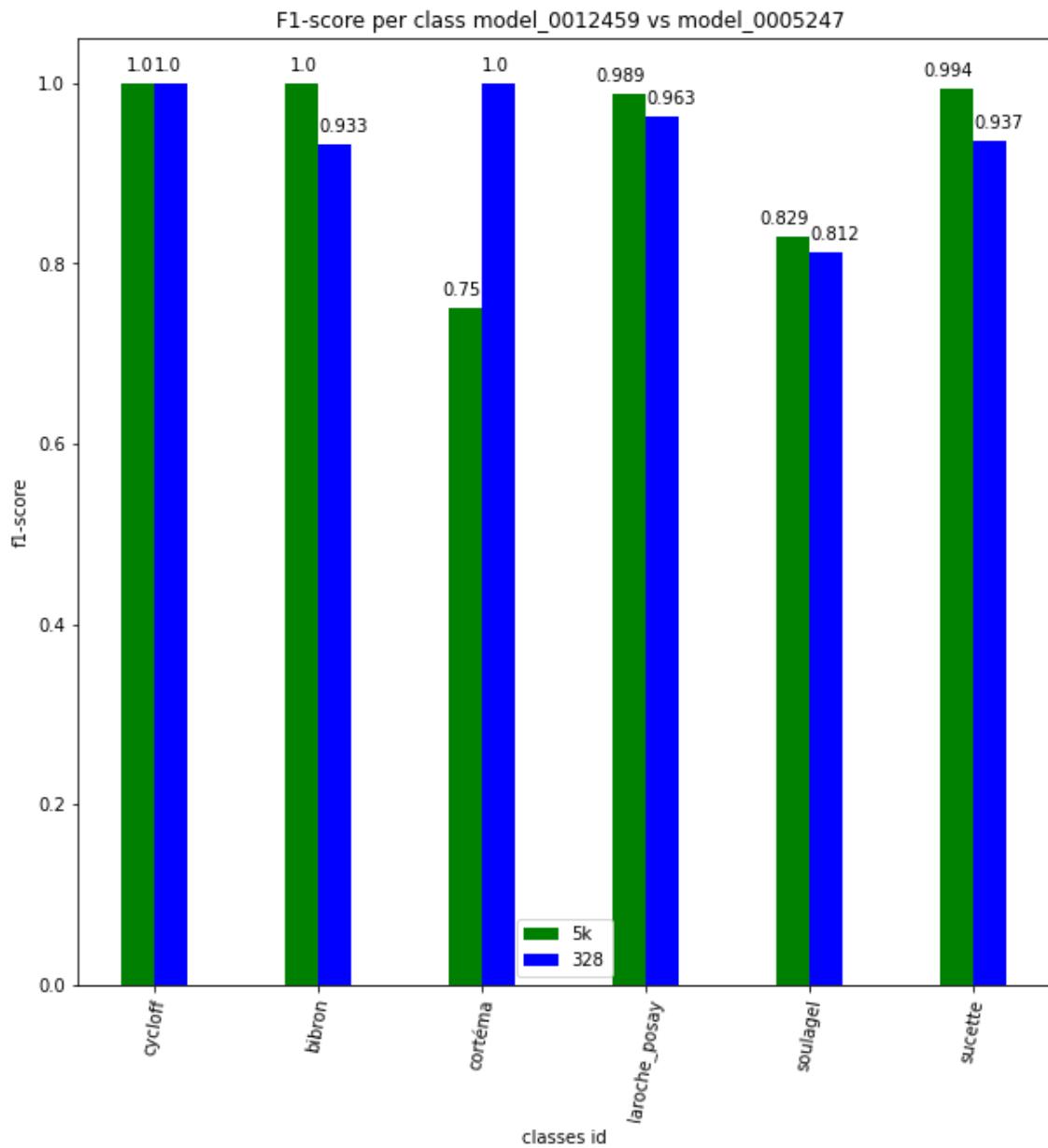
Confusion Matrix

	cyclöff	bibron	cortéma	laroche_posay	soulagel	sucette
cyclöff	76	0	0	0	0	0
bibron	0	92	0	0	0	0
cortéma	0	0	76	0	10	0
laroche_posay	0	0	0	48	0	0
soulagel	0	0	0	0	31	0
sucette	0	0	0	0	0	74

F1 score model 0012459



Case of old model trained on 328 imgs

**F1 score comparaison for two models**

## Third Training

### Adding multiclass imgs to the train set

- annotating

	label_name	bbox_x	bbox_y	bbox_width	bbox_height		image_name	image_width	image_height
0	sucette	662	52	986	1071	IMG_20220930_185918.jpg	2400	2100	
1	laroche_posay	124	1033	958	462	IMG_20220930_185918.jpg	2400	2100	
2	soulagel	1106	1222	647	873	IMG_20220930_185918.jpg	2400	2100	
3	sucette	775	760	1114	949	IMG_20220930_185950.jpg	2400	2100	
4	sucette	39	0	1095	991	IMG_20220930_190049.jpg	2400	2100	

- Dict annotation for detectron2 input

- `annotations` (list[dict]): Required by instance detection/segmentation or keypoint detection tasks. Each dict corresponds to annotations of one instance in this image, and may contain the following keys:
  - `bbox` (list[float], required): list of 4 numbers representing the bounding box of the instance.
  - `bbox_mode` (int, required): the format of bbox. It must be a member of `structures.BoxMode`. Currently supports: `BoxMode.XYXY_ABS` , `BoxMode.XYWH_ABS` .
  - `category_id` (int, required): an integer in the range [0, num\_categories-1] representing the category label. The value num\_categories is reserved to represent the "background" category, if applicable.

```
{'file_name': './data/train/0339.jpg',
'height': 2100,
'width': 2400,
'image_id': 339,
'annotations': [{'iscrowd': 0,
  'bbox': [915, 654, 568, 853],
  'category_id': 4,
  'bbox_mode': 1}]} 
```

- **Background removal using rembg**

```
for input_path in glob.glob('./data/visual_test_imgs/random_tests/multi_class_input/*.jpg'):
    output_path = input_path.replace('input', 'output').replace('jpg', 'png')
    input = Image.open(input_path)
    input = input.resize((2400, 2100))
    output = remove(input)
    see_me(output)
    output.save(output_path)
    bg_img = Image.open("./data/background.png")
    output.convert('RGBA')
    bg_img.paste(output, box=(0,0), mask = output)
    see_me(bg_img)
    bg_img.save(input_path)
```

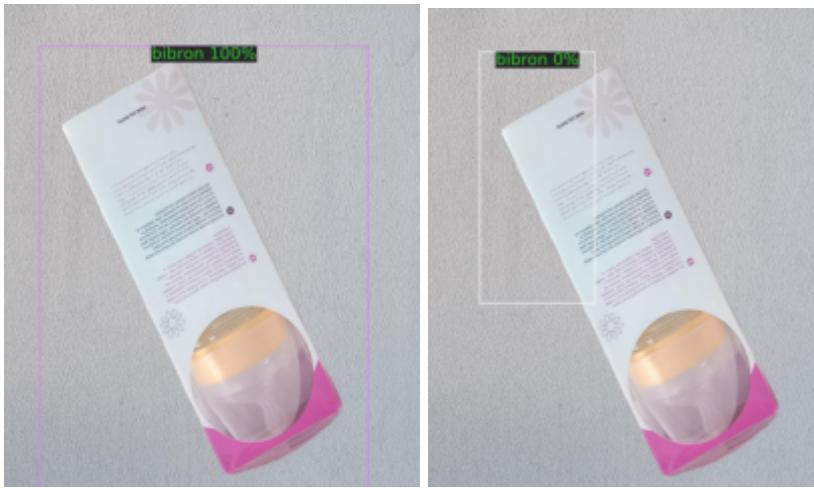


- **Visualize ground truth annotations**



- Box mode issue

```
dct, im = custom_mapper(dict_test[0],0,0) #input coco format and output  
voc format  
vizualiz_augmentation(dct,im) # display annotation in voc format  
viz_dict(dict_test[0],im) # display annotations in voc format if wrong  
then it's coco format
```



- **Augment multiclass images : Flip H and V , rotation 90 and 180**



Augmented data from Basic annotation dict (38 images)

```
detectron2.data.print_instances_class_histogram(data_train, train_metadata.thing_classes)

[10/17 08:01:25 d2.data.build]: Distribution of instances among all 6 categories:
category | #instances | category | #instances | category | #instances |
:-----:|:-----:|:-----:|:-----:|:-----:|:-----:
cycloff | 6 | bibron | 8 | cortéma | 8
laroche_posay | 13 | soulagel | 12 | sucette | 10
total | 57 | | | |
```

detectron2.data.print\_instances\_class\_histogram(data\_train, train\_metadata.thing\_classes)

```
[10/17 11:52:24 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----|
| cycloff | 206 | bibron | 508 | cortéma | 408 |
| laroche_posay | 813 | soulagel | 512 | sucette | 210 |
| total | 2657 | | | |
```

detectron2.data.print\_instances\_class\_histogram(data\_train, train\_metadata.thing\_classes)

```
[10/17 12:24:13 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----|
| cycloff | 210 | bibron | 518 | cortéma | 416 |
| laroche_posay | 829 | soulagel | 522 | sucette | 214 |
| total | 2709 | | | |
```

detectron2.data.print\_instances\_class\_histogram(data\_train, train\_metadata.thing\_classes)

```
[10/17 13:28:30 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----|
| cycloff | 406 | bibron | 1008 | cortéma | 808 |
| laroche_posay | 1613 | soulagel | 1012 | sucette | 410 |
| total | 5257 | | | |
```

### Final version of training set 6807 imgs [final version](#)

detectron2.data.print\_instances\_class\_histogram(data\_train, train\_metadata.thing\_classes)

```
[10/17 14:40:57 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----|
| cycloff | 556 | bibron | 1383 | cortéma | 1108 |
| laroche_posay | 1813 | soulagel | 1387 | sucette | 560 |
| total | 6807 | | | |
```

### Old version 5679 imgs

detectron2.data.print\_instances\_class\_histogram(dict\_train, train\_metadata.thing\_classes)

```
[10/12 07:16:20 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----|
| cycloff | 540 | bibron | 1360 | cortéma | 827 |
| laroche_posay | 1108 | soulagel | 1310 | sucette | 534 |
| total | 5679 | | | |
```

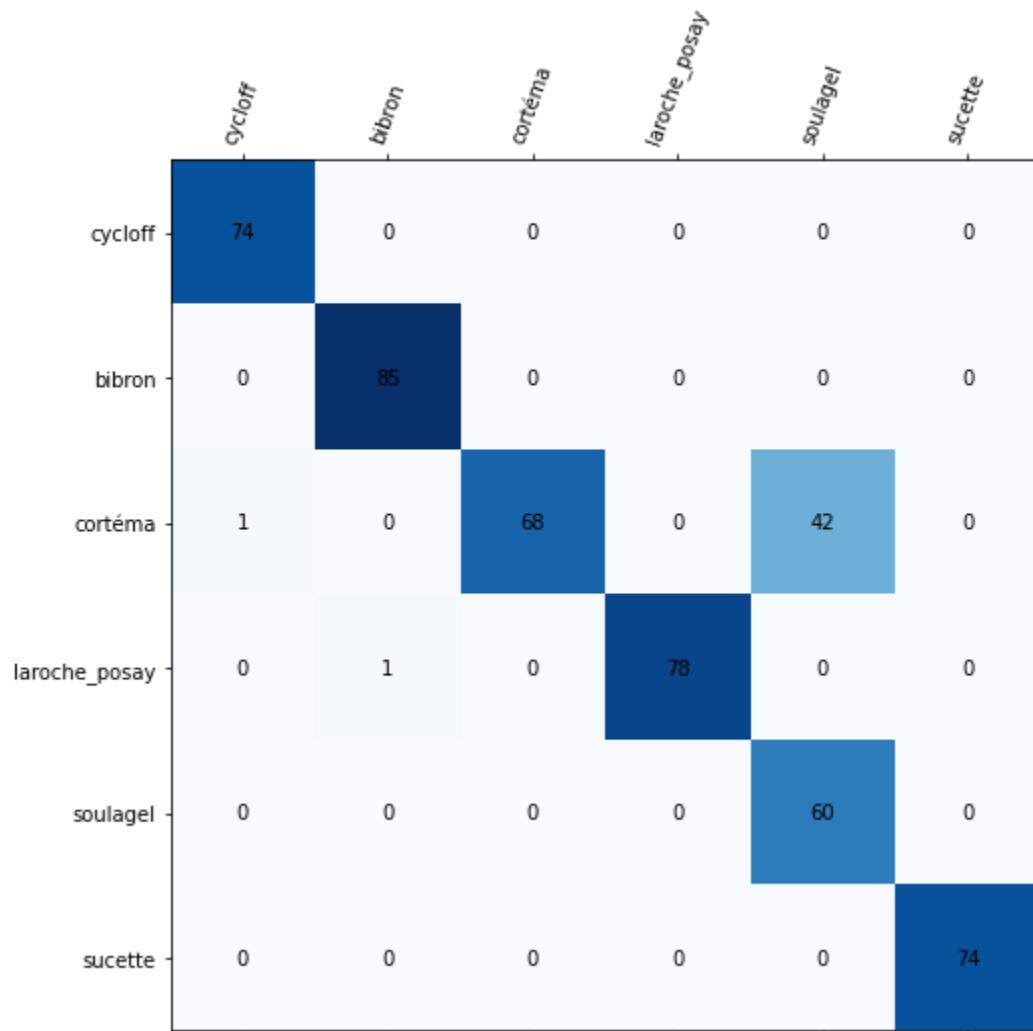
## Categories with more sides have more images per class

### Testset construction

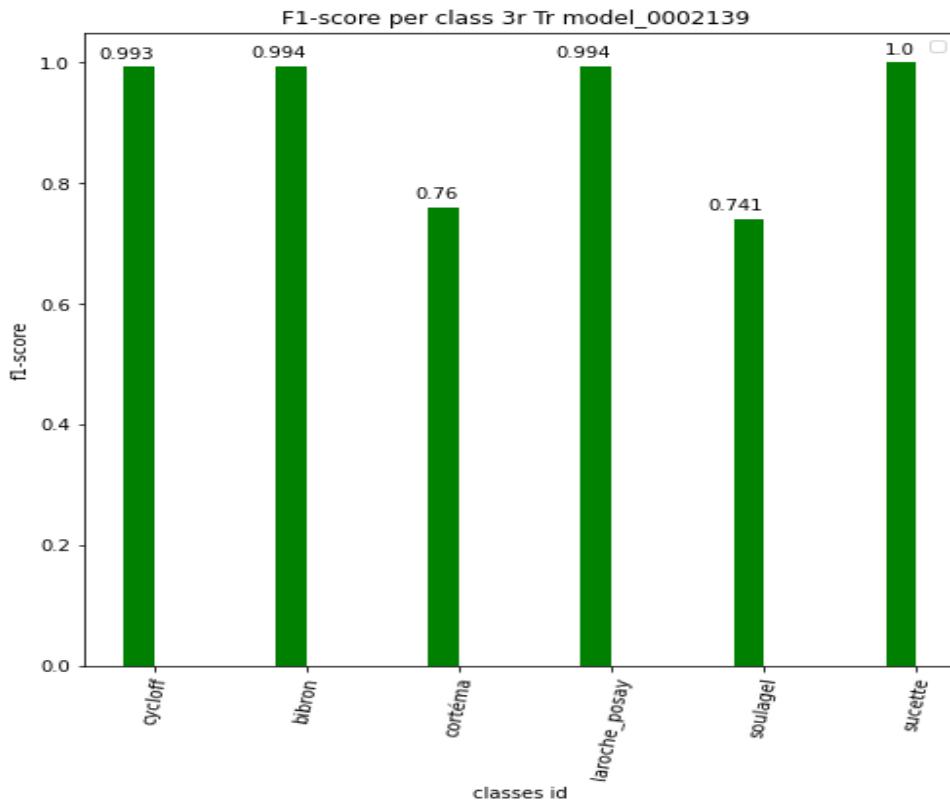
```
[10/12 21:56:57 d2.data.build]: Distribution of instances among all 6 categories:
+-----+-----+-----+-----+-----+
| category | #instances | category | #instances | category | #instances |
+-----+-----+-----+-----+-----+
| cycloff | 74 | bibron | 85 | cortéma | 68 |
| laroche_posay | 78 | soulagel | 85 | sucette | 74 |
| total | 464 | | | | |
+-----+-----+-----+-----+-----+
```

### Confusion matrix

Confusion Matrix 3rd Tr model\_0002139



## F1-score



## Bbox coco evaluation

```
best model in fold is model_0002139.pth AP50 = 8.373023084914514
[10/18 08:51:38 d2.evaluation.fast_eval_api]: Evaluate annotation type *bbox*
[10/18 08:51:38 d2.evaluation.fast_eval_api]: COCOeval_opt.evaluate() finished in 0.05 seconds.
[10/18 08:51:38 d2.evaluation.fast_eval_api]: Accumulating evaluation results...
[10/18 08:51:38 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.079
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.083
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.083
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.079
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.102
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.102
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.102
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.102
[10/18 08:51:38 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP | AP50 | AP75 | APs | APM | API |
|-----|-----|-----|-----|-----|-----|
| 7.855 | 8.295 | 8.295 | nan | nan | 7.855 |
[10/18 08:51:38 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and is shown as NaN.
[10/18 08:51:38 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category | AP | category | AP | category | AP |
|-----|-----|-----|-----|-----|-----|
| cycloff | 4.243 | bibron | 10.560 | cortéma | 1.221 |
| laroche_posay | 18.479 | soulagel | 7.604 | sucette | 5.021 |
OrderedDict([('bbox', {'AP': 7.8547821383821645, 'AP50': 8.294687374497554, 'AP75': 8.294687374497554, 'APs': nan,
```

## Testset with synthetic multiclass imgs

Building synthetically made test set of multiclass images : [folder](#)

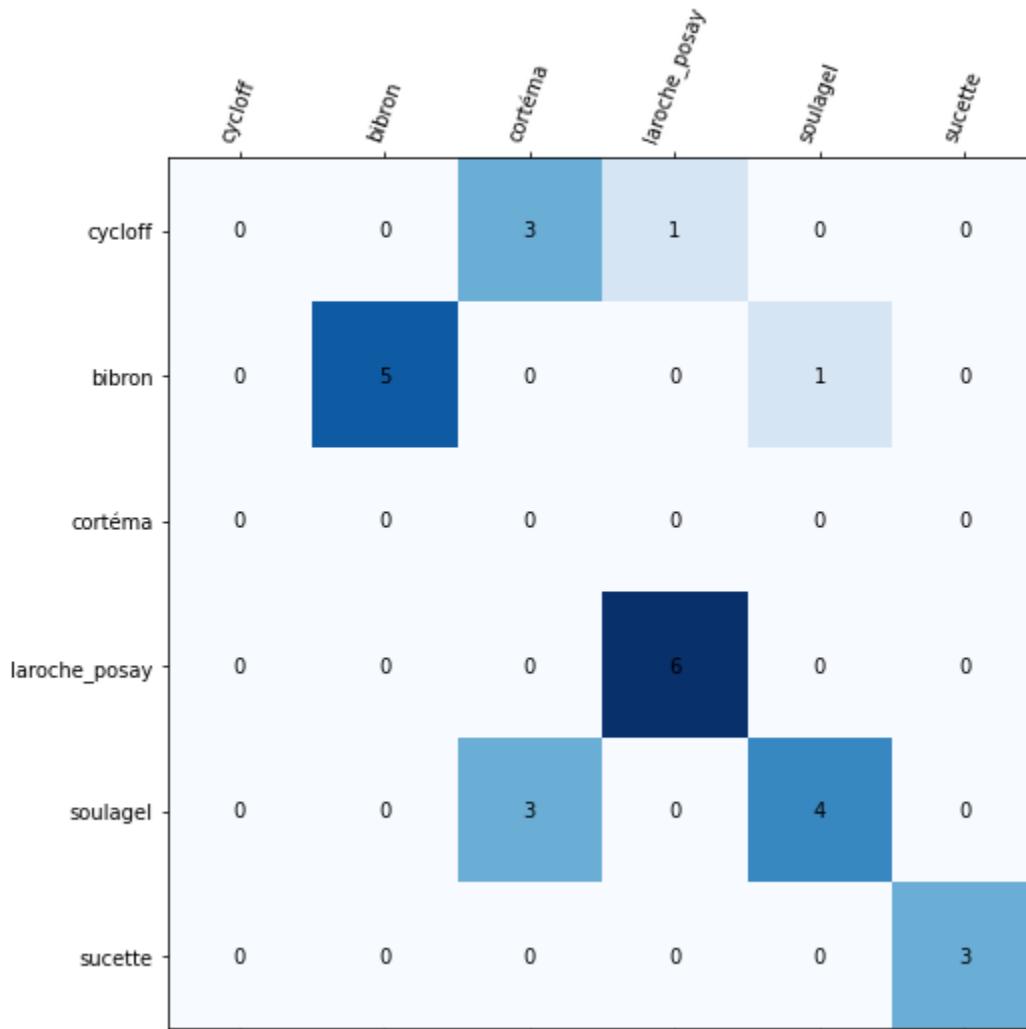
```
detectron2.data.print_instances_class_histogram(dict_test, test_metadata.thing_classes)
```

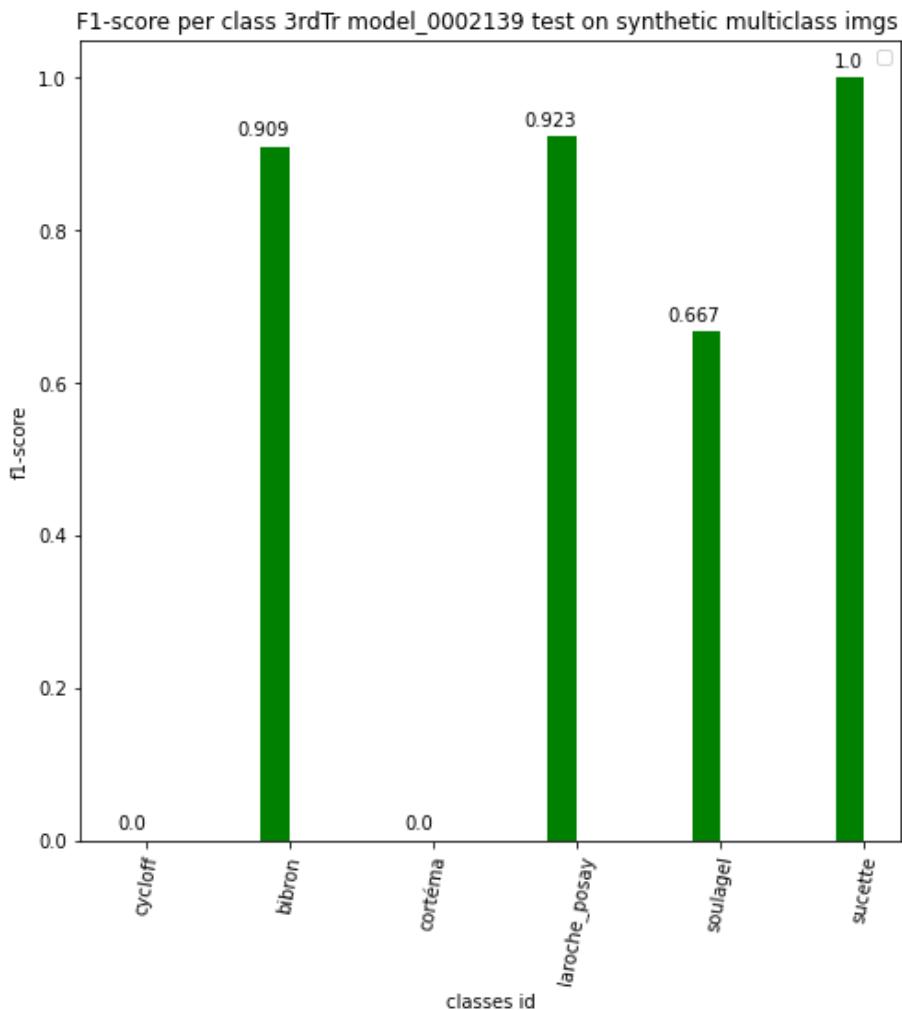
[10/18 14:00:19 d2.data.build]: Distribution of instances among all 6 categories:

category	#instances	category	#instances	category	#instances
cycloff	11	bibron	6	cortéma	15
laroche_posay	15	soulagel	14	sucette	6
total	67				

## Confusion matrix

Confusion Matrix 3rd Tr model\_0002139 test on multiclass imgs only



**F1-score**

## Result coc evaluation

wrong

```
[10/18 14:06:18 d2.evaluation.fast_eval_api]: Evaluate annotation type *bbox*
[10/18 14:06:18 d2.evaluation.fast_eval_api]: COCOEval_opt.evaluate() finished in 0.01 seconds.
[10/18 14:06:18 d2.evaluation.fast_eval_api]: Accumulating evaluation results...
[10/18 14:06:18 d2.evaluation.fast_eval_api]: COCOEval_opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @ [ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.030
Average Precision (AP) @ [ IoU=0.50 | area= all | maxDets=100 ] = 0.119
Average Precision (AP) @ [ IoU=0.75 | area= all | maxDets=100 ] = 0.006
Average Precision (AP) @ [ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @ [ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @ [ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.030
Average Recall (AR) @ [ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.036
Average Recall (AR) @ [ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.036
Average Recall (AR) @ [ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.036
Average Recall (AR) @ [ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @ [ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @ [ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.036
[10/18 14:06:18 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP   | AP50  | AP75  | APs   | APM   | API  |
|:-----|:-----|:-----|:-----|:-----|:-----|
| 2.966 | 11.945 | 0.578 | nan   | nan   | 2.966 |
[10/18 14:06:18 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and is shown as NaN.
[10/18 14:06:18 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category | AP    | category | AP    | category | AP    |
|:-----|:-----|:-----|:-----|:-----|:-----|
| cyclöff | 0.000 | bibrón  | 7.855 | cortéma | 0.000 |
| laroche_posay | 3.119 | soulagel | 0.088 | suquette | 6.733 |
OrderedDict([('bbox', {'AP': 2.965713237990466, 'AP50': 11.945361202786945, 'AP75': 0.5775577557755776, 'APs': 0.5775577557755776, 'APM': 2.965713237990466, 'API': 2.965713237990466}), ('coco', {}), ('segm', {}), ('keypoints', {}), ('panoptic', {})]))
```

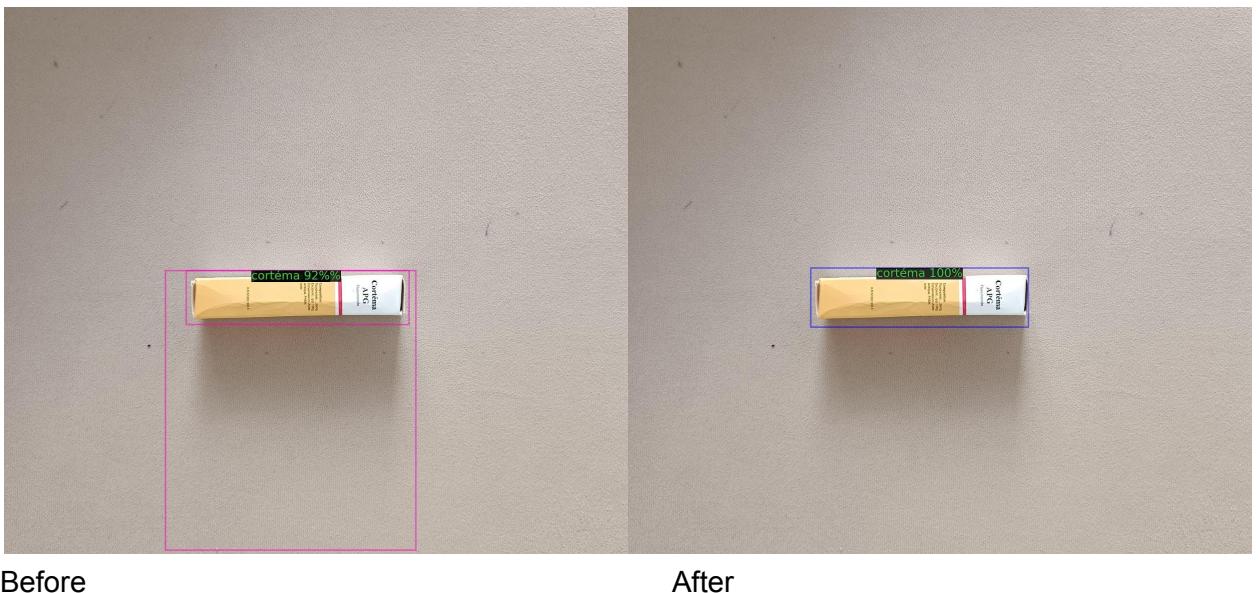
correct

```
[10/21 04:35:49 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.↑ ↓ ↻ ☰ 🔍 🚧 🗑️
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.606
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.830
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.811
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.606
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.601
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.646
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.646
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.646
[10/21 04:35:49 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP | AP50 | AP75 | APs | APM | APL |
|-----|-----|-----|-----|-----|-----|
| 60.627 | 82.993 | 81.101 | nan | nan | 60.627 |
[10/21 04:35:49 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and is shown as NaN.
[10/21 04:35:49 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category | AP | category | AP | category | AP |
|-----|-----|-----|-----|-----|-----|
| cycloff | 77.877 | bibron | 75.769 | cortéma | 15.710 |
| laroche_posay | 67.427 | soulagel | 56.950 | sucette | 70.033 |
OrderedDict([('bbox', {'AP': 60.62748313454487, 'AP50': 82.99337776914946, 'AP75': 81.10081876534994, 'APs': nan, 'APL': 60.627, 'APM': nan}), ('cycloff', {'AP': 77.877}), ('bibron', {'AP': 75.769}), ('cortéma', {'AP': 15.71}), ('laroche_posay', {'AP': 67.427}), ('soulagel', {'AP': 56.95}), ('sucette', {'AP': 70.033})])
```

### **Conclusion:**

- Due to storage limitation 30 checkpoints wasn't saved from the training
  - After testing the best checkpoint gave the coco evaluation results above ( p18)
  - According to f1-score bars, the classification of the cortema and soulagel decreased as the number of images kept increasing:  
cortéma: 1 on 328 imgs train set, 0.75 on 5k train set and 0.76 on 6k train set  
Soulagel: 0.812 on 328imgs set, 0.829 on 5k train set and 0.74 on 6k tarinset

- Visually the performance improved : the problem of big bbox has been fixed  
Compared imgs in the folder



Before

After

Adding more images to some classes ==> bad results in these classes

## Fourth training

### Trainset construction

```
3] detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

```
[10/19 14:23:43 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----:|
| cycloff | 2 | bibron | 5 | cortéma | 5 |
| laroche_posay | 9 | soulagel | 7 | sucette | 2 |
| total | 30 | | | |
```

```
● 4] detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

```
[10/19 15:10:48 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|:-----:|:-----:|:-----:|:-----:|:-----:|:-----:|
| cycloff | 202 | bibron | 505 | cortéma | 505 |
| laroche_posay | 909 | soulagel | 707 | sucette | 202 |
| total | 3030 | | | |
```



```
detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

[10/19 15:49:02 d2.data.build]: Distribution of instances among all 6 categories:

category	#instances	category	#instances	category	#instances
cycloff	302	bibron	755	cortéma	755
laroche_posay	1359	soulagel	1057	sucette	302
total	4530				



```
detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

[10/19 16:11:45 d2.data.build]: Distribution of instances among all 6 categories:

category	#instances	category	#instances	category	#instances
cycloff	306	bibron	758	cortéma	758
laroche_posay	1363	soulagel	1062	sucette	310
total	4557				

```
[340] detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

[10/19 16:33:23 d2.data.build]: Distribution of instances among all 6 categories:

category	#instances	category	#instances	category	#instances
cycloff	322	bibron	770	cortéma	770
laroche_posay	1379	soulagel	1082	sucette	342
total	4665				

wrong

```
[347] detectron2.data.print_instances_class_histogram(synth_dict, train_metadata.thing_classes)
```

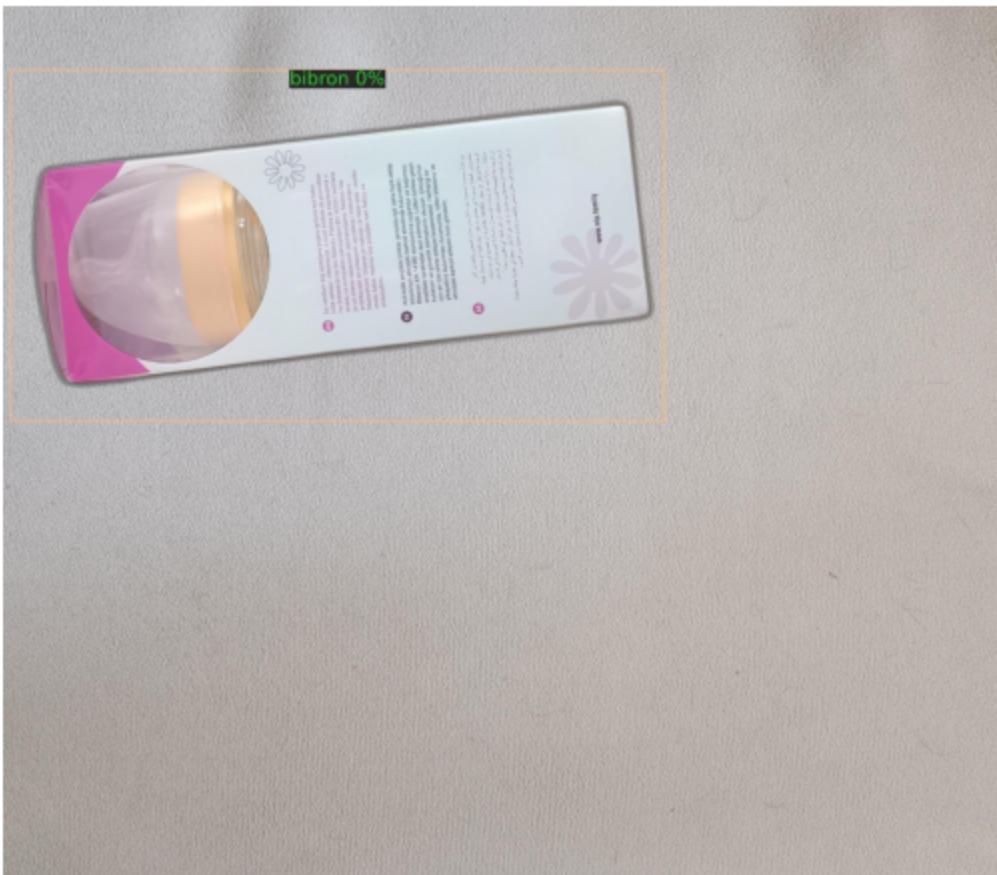
[10/19 16:39:21 d2.data.build]: Distribution of instances among all 6 categories:

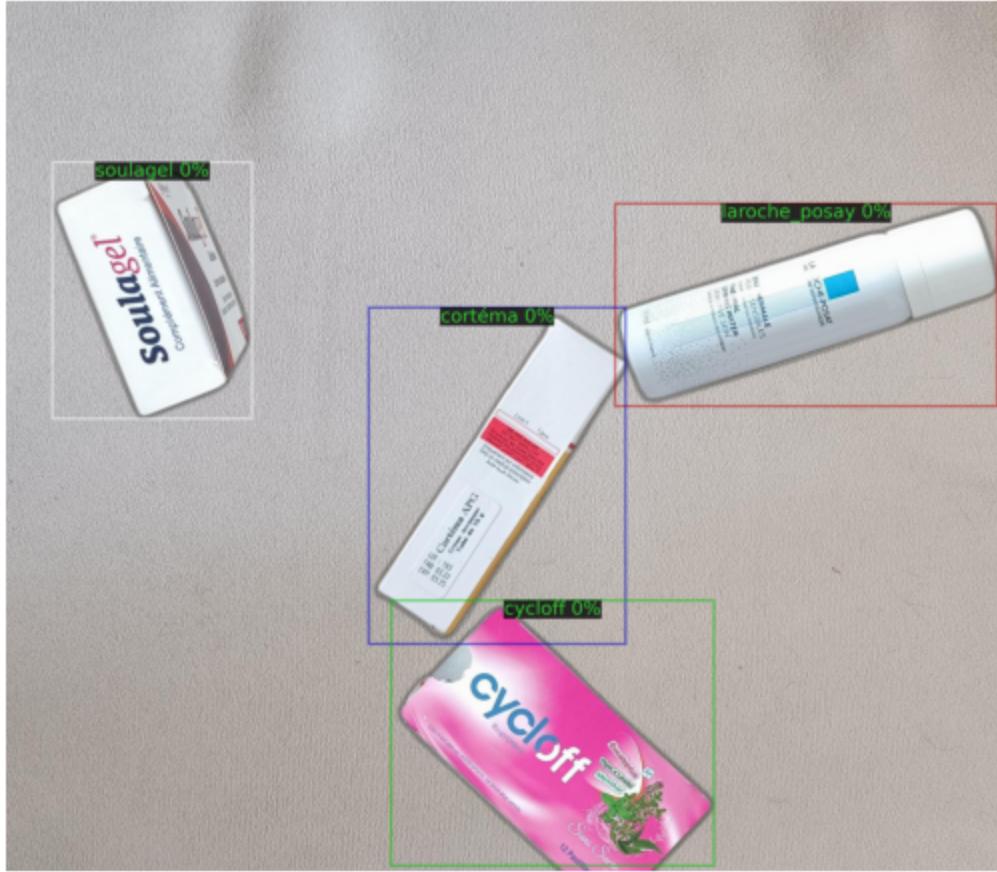
category	#instances	category	#instances	category	#instances
cycloff	333	bibron	776	cortéma	785
laroche_posay	1394	soulagel	1096	sucette	348
total	4732				

Good job ! 199 multiclass imgs were added

[10/19 23:09:01 d2.data.build]: Distribution of instances among all 6 categories:

category	#instances	category	#instances	category	#instances
cycloff	334	bibron	802	cortéma	838
laroche_posay	1463	soulagel	1194	sucette	394
total	5025				



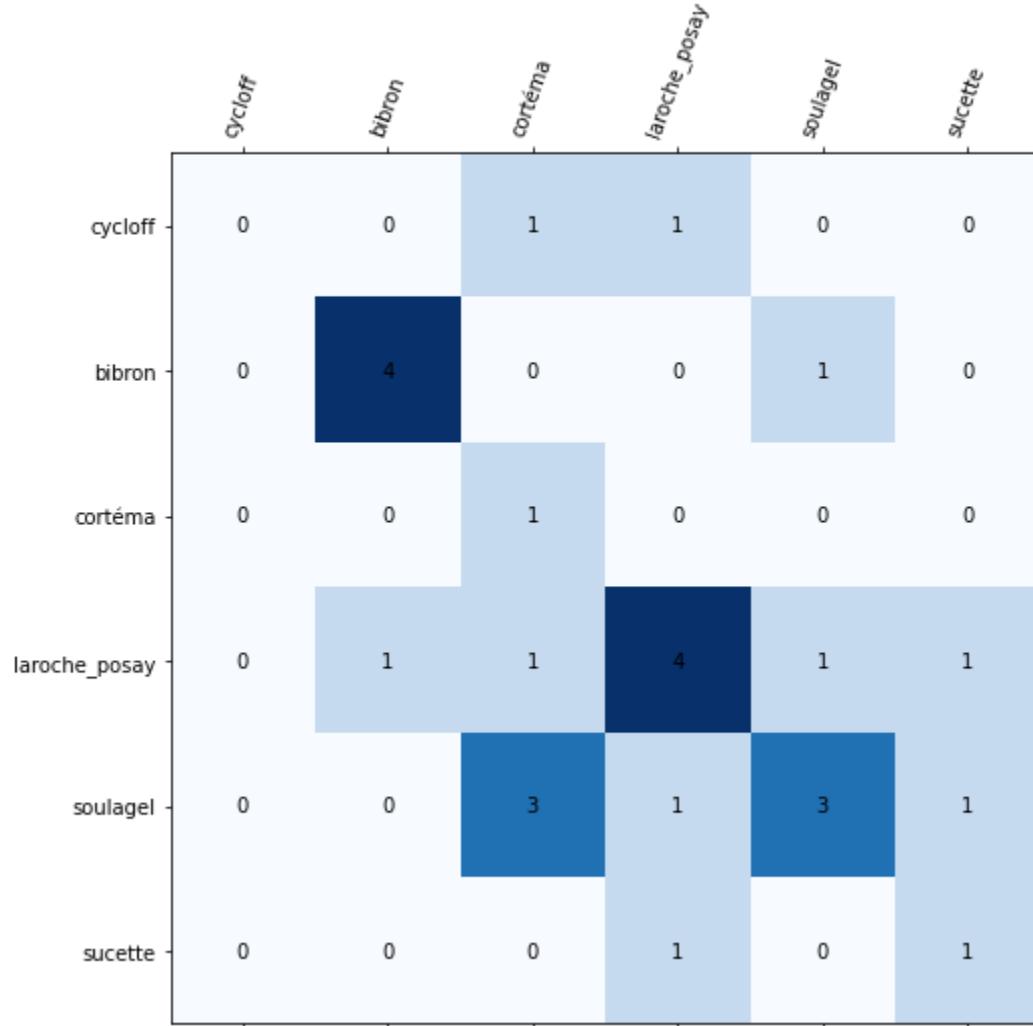


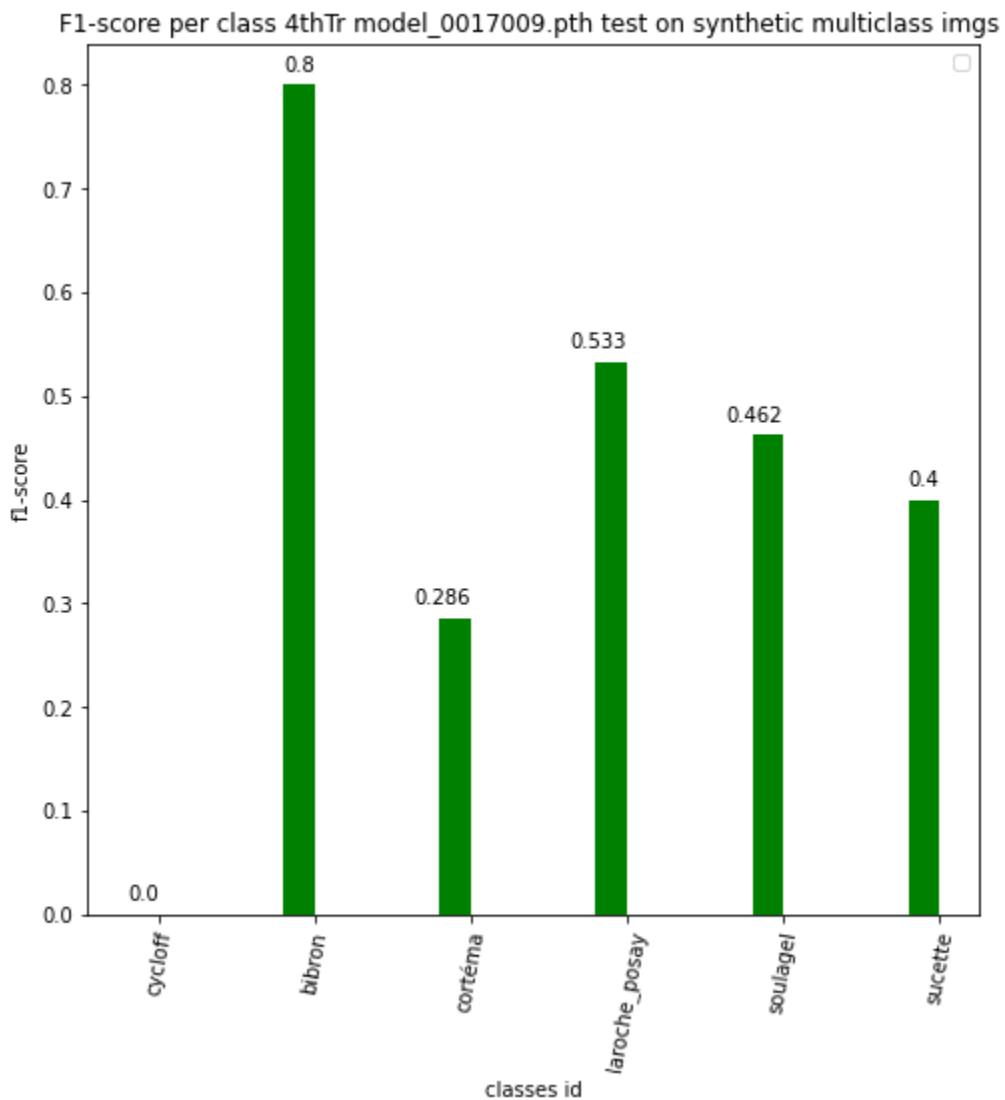
### Coco result on synthetic test set

best model in fold is model\_0017009.pth AP= 74.2403956741828  
{'AP': 74.2403956741828,  
'AP50': 99.72153465346535,  
'AP75': 89.86485873862111,  
'APs': nan,  
'APm': nan,  
'API': 74.2403956741828,  
'AP-cycloff': 83.15774434586316,  
'AP-bibron': 88.10891089108911,  
'AP-cortéma': 71.79152915291529,  
'AP-laroche\_posay': 72.90081824116477,  
'AP-soulagel': 68.67479055597869,  
'AP-sucette': 60.80858085808581}

Confusion matrix

Confusion Matrix 4thTr model\_0017009.pth test on 26multiclass imgs only



**F1-score per class bars**

```
[10/21 06:02:53 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.01 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.742
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.997
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.899
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.742
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.743
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.783
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.783
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.783
[10/21 06:02:53 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP | AP50 | AP75 | APs | APm | AP1 |
|-----|-----|-----|-----|-----|-----|
| 74.240 | 99.722 | 89.865 | nan | nan | 74.240 |
[10/21 06:02:53 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and is shown as NaN.
[10/21 06:02:53 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category | AP | category | AP | category | AP |
|-----|-----|-----|-----|-----|-----|
| cycloff | 83.158 | bibron | 88.109 | cortéma | 71.792 |
| laroche_posay | 72.901 | soulagel | 68.675 | sucette | 60.809 |
OrderedDict([('bbox', {'AP': 74.2403956741828, 'AP50': 99.72153465346535, 'AP75': 89.86485873862111, 'APs': 89.86485873862111, 'APm': 71.792, 'AP1': 74.2403956741828}])
```

### Test set with single instance per image

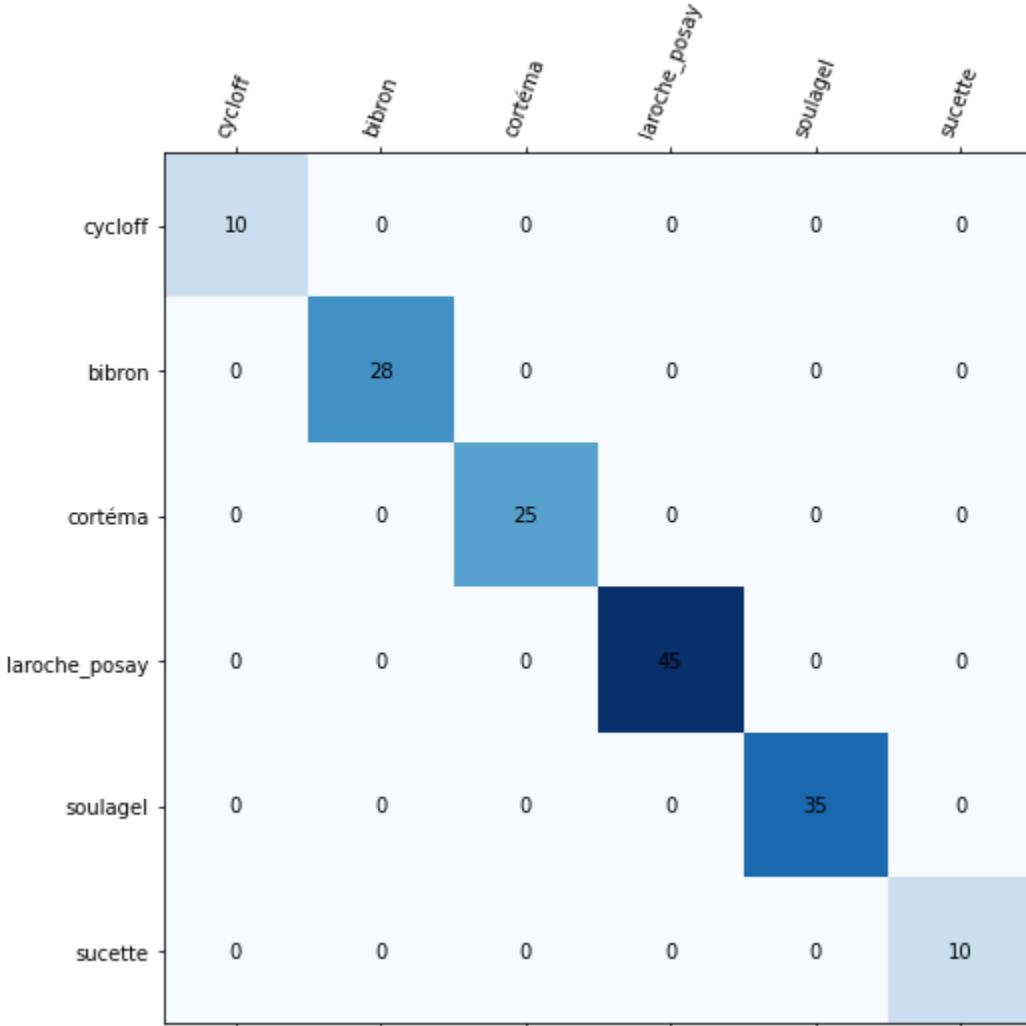
```
detectron2.data.print_instances_class_histogram(dict_test, test_metadata.thing_classes)
[10/21 07:32:29 d2.data.build]: Distribution of instances among all 6 categories:
| category | #instances | category | #instances | category | #instances |
|-----|-----|-----|-----|-----|-----|
| cycloff | 10 | bibron | 28 | cortéma | 25 |
| laroche_posay | 45 | soulagel | 35 | sucette | 10 |
| total | 153 | | | | |
```

## Coco evaluation bbox

```
[10/21 07:39:56 d2.evaluation.fast_eval_api]: COCOeval_opt.accumulate() finished in 0.02 seconds.
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.823
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 1.000
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.823
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.855
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.855
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.855
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets=100 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.855
[10/21 07:39:56 d2.evaluation.coco_evaluation]: Evaluation results for bbox:
| AP | AP50 | AP75 | APs | APm | AP1 |
|-----|-----|-----|-----|-----|-----|
| 82.342 | 100.000 | 100.000 | nan | nan | 82.342 |
[10/21 07:39:56 d2.evaluation.coco_evaluation]: Some metrics cannot be computed and is shown as N
[10/21 07:39:56 d2.evaluation.coco_evaluation]: Per-category bbox AP:
| category | AP | category | AP | category | AP |
|-----|-----|-----|-----|-----|-----|
| cycloff | 82.408 | bibron | 85.347 | cortéma | 81.132 |
| laroche_posay | 88.483 | soulagel | 86.086 | sucette | 70.598 |
OrderedDict([('bbox', {'AP': 82.34225189982038, 'AP50': 100.0, 'AP75': 100.0, 'APs': nan, 'APm':
```

### Confusion matrix

Confusion Matrix 4thTr model\_0017009.pth test on 152 singleclass imgs only



### Fiveth Training

Training on detr

Check notebook