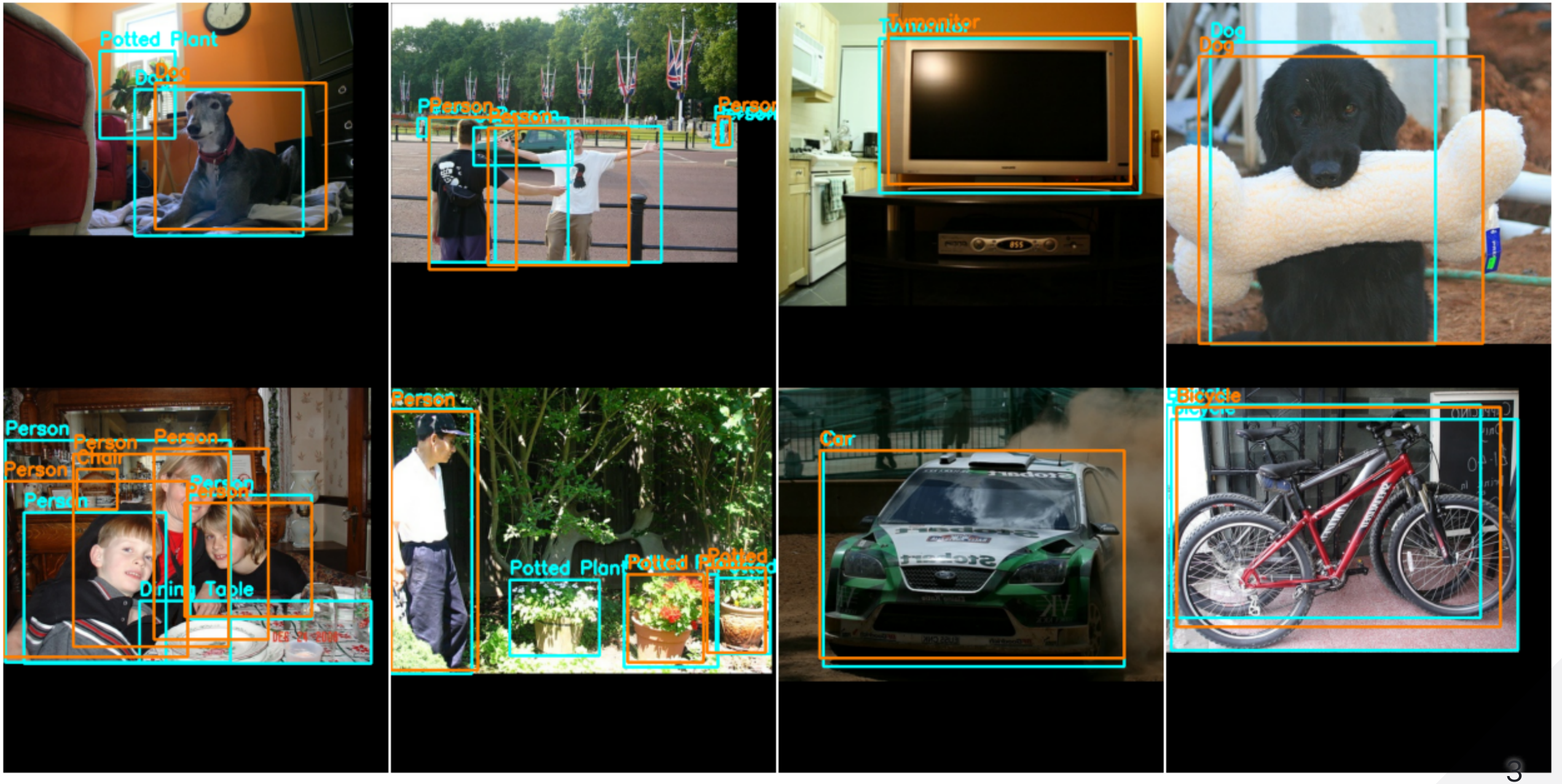
Object Detection with KerasCV API

⚠️ API is still experimental ⚠️


Potted Plant
Dog
Person
Tvmonitor
Dog
Person
Chair
Dining Table
Person
Potted Plant
Car
Bicycle

Background

- 1.5~ years ago I wrote a few object detection pipelines
- user experience was not good
- many issues (format mismatch, NaN loss, etc)

Key painpoints

- bounding box formats were hard to manage
- data augmentation
- image shape management
- inherent ragged-ness of bounding boxes
- metric evaluation

Feature Highlights

- TPU compatibility
- Train time COCO metric evaluation
- Native support for ragged bounding box inputs
- bounding box enabled augmentations

API Highlights

- explicit bounding box formats
- highly modular
- ragged native preprocessing and augmentation layers

```
# What format should the bounding boxes be in?
shear = layers.RandomShear(
  factor=0.1,
)
```

```
shear = layers.RandomShear(
  factor=0.1,
  # bounding box format is explicit
  bounding_box_format='xywh'
)
```

```
# images are ragged
# bounding box correctly augmented
augmenter = [
  layers.RandomFlip(bounding_box_format='xywh'),
  layers.RandomAspectRatio(factor=(0.9, 1.1)),
  layers.JitteredResize(
    target_size=(640, 640),
    scale_factor=(0.8, 1.35),
    bounding_box_format='xywh'
  ),
  layers.MixUp()
]
```

Demo Colab Notebook