

# About

This tool is developed for wildlife detection. Currently, the tool is supported by Python3, Pytorch and Detectron2.

# Installation

To use the tool, please install the Detectron2 following the [installation instructions](#).

You also need to install the following packages:

- opencv: pip install opencv
- ensemble-boxes: pip install ensemble-boxes
- scikit-image: pip install scikit-image
- imantics: pip install imantics
- Pillow: pip install Pillow

# Usage

When using this tool run 'python main.py -h' or 'python main.py --help' to get the help information.

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Currently the following parameters can be used:

- ImgPath                      The path of the image file.
- DirPath                      The path of the image dir.
- Classification\_Usage If classification model will be used to help detection.
- WBF\_Usage                      If Weighted-Boxes-Fusion will be used to help detection.
- Output\_Dir                      Setup the path of output results you want to save.
- Draw\_Detection                      If generating images with detected animals.

You must offer a valid image path or the path of a folder with images, currently we only support '.jpg' and '.JPG' files.

Example commands:

Basic running:

```
python main.py --DirPath /Volumes/LIN/ANIMAL_DETECTION/DEMO_DATA
```

Running with draw detection output:

```
python main.py --DirPath /Volumes/LIN/ANIMAL_DETECTION/DEMO_DATA --  
Draw_Detection True
```

Running with classification and WBF:

```
python main.py --DirPath /Volumes/LIN/ANIMAL_DETECTION/DEMO_DATA --  
Draw_Detection True --Classification_Usage True --WBF_Usage True
```

Running with specific output folder:

```
python main.py --DirPath /Volumes/LIN/ANIMAL_DETECTION/DEMO_DATA --  
Output_Dir /Volumes/LIN/ANIMAL_DETECTION/DEMO_OUTPUT/OUTPUT_TEST
```

## Output

### 1. Normal output json file

The default output file is 'detection.json' file:

```
{  
  "Armadillo7": [  
    {  
      "id": 1,  
      "bbox": [  
        [  
          0.2148,  
          0.6778,  
          0.4016,  
          0.7958  
        ]  
      ],  
      "class": "Armadillo",  
      "conf": 0.9924  
    }  
  ],  
  "Armadillo2": [  
    {  
      "id": 1,  
      "bbox": [  
        [  
          0.2422,          0.6778,  
          0.4016,  
          0.7958  
        ]  
      ],  
      "class": "Armadillo",  
      "conf": 0.9924  
    }  
  ]  
}
```

```

        0.6505,
        0.4714,
        0.9097
    ],
    ],
    "class": "Armadillo",
    "conf": 0.9932
}
]
}

```

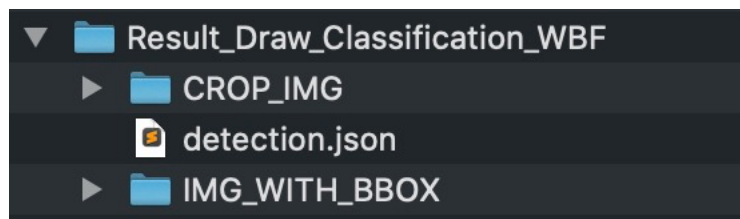
## 2. Image with Detection result:

If '--Draw\_Detection' is set to 'True', there will be a folder called 'IMG\_WITH\_BBOX' with the images with detected bounding boxes on it.



## 2. Intermedia result (cropped images) for classification model:

If '--Classification\_Usage is set to 'True', there will be a folder called 'CROP\_IMG' with the cropped images detected by the detection model.



Example Cropped Image:

