This script is used for processing images and visualizing results using object detection models DetectoRS, Faster R-CNN, and YOLOv5. Below is the outline of the Open Source Execution Manual (document).

### **Open Source Execution Manual**

#### 1. Overview

* Purpose: To detect and compare objects in images using DetectoRS, Faster R-CNN, YOLOv5 models.
* Used Models: DetectoRS, Faster R-CNN, YOLOv5.

#### 2. Environment Setup

* Required Libraries: PIL, IPython, detecto, torchvision, torch, cv2, ultralytics, numpy.
* Warning and Environment Variable Settings: Ignore warnings, set KMP\_DUPLICATE\_LIB\_OK environment variable.

#### 3. Function Definitions

* **concatenate\_images\_horizontally(images):** Concatenate images horizontally.
* **visualize\_results(detector\_image, faster\_cnn\_image, yolov\_image): Visualize** detection results.
* **process\_images(input\_folder\_base, output\_folder\_base, start\_folder, end\_folder, models):** Process images and generate results.

#### 4. Execution Method

* Image Data Input Folder Path: Set input\_folder\_base.
* Folder Path to Return to After Image Detection: Set output\_folder\_base.
* Set Image Range: Define start\_folder and end\_folder.
* Model Name Setting: Set models.
* Execute Image Processing: Call the process\_images function.

#### 5. Code Execution

* Execute the script in the if \_\_name\_\_ == "\_\_main\_\_" section.