LabelMe instructions for image annotation

Criteria to take into account:
- Try to avoid objects in front, and fire as much as possible.
- Annotate multiple instances of smoke, if there's the case, in one image (main body).

LabelMe installation instructions:
LabelMe GitHub: https://github.com/wkentaro/labelme

Video tutorial of LabelMe installation: https://www.youtube.com/watch?v=jFqH-EyRMsc

1. Install Anaconda (https://www.anaconda.com/download)
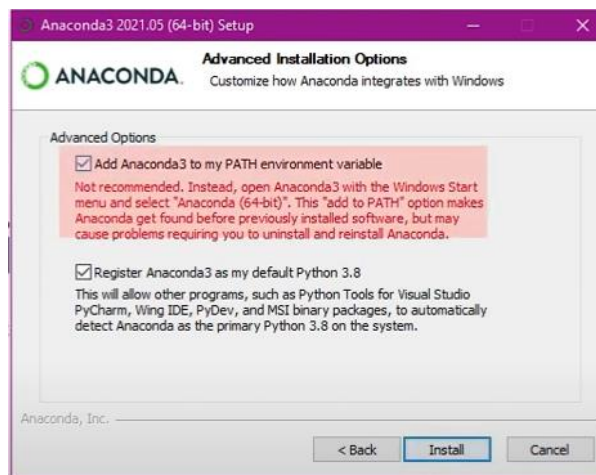   *It's important to check the two advanced options of Figure 1.

Figure 1. Anaconda installation advanced options

2. Open Command Anaconda Prompt (by writing cmd in the windows home menu or press Win+R keys and searching for cmd)

3. Write the following commands in the cmd, in order to create a labelme environment and install it:

(base) C:\Users\user.name>*conda create --name=labelme python=3.9.**

(base) C:\Users\user.name>*conda activate labelme*

(labelme) C:\Users\user.name>*pip install labelme*

Image annotation with LabelMe:

Video tutorial of LabelMe annotation: https://www.youtube.com/watch?v=s29olnhv0dA

1. Install LabelMe code from GitHub (https://github.com/wkentaro/labelme), unzip it and extract the files.

Figure 2. Download LabelMe code from https://github.com/wkentaro/labelme
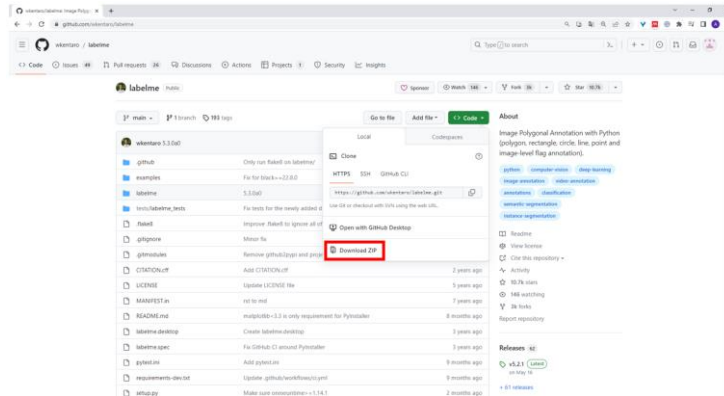
2. Copy the *semantic_segmentation* folder in the directory you will work on (in this case is the Desktop)

From: C:\Users\user.name\Downloads\labelme-main\labelme-main\examples\semantic_segmentation

To: C:\Users\user.name\Desktop\semantic_segmentation

3. Delete the folders *data_annotated* and *data_dataset_voc* from this directory.

C:\Users\alba.baldrich\Desktop\semantic_segmentation\data_annotated

C:\Users\alba.baldrich\Desktop\semantic_segmentation\data_dataset_voc

4. Copy the folder with the images to annotate inside the *semantic_segmentation* directory.

C:\Users\alba.baldrich\Desktop\semantic_segmentation\images_folder

5. Activate the LabelMe environment created and open the software.

(base) C:\Users\user.name>*conda activate labelme*

(labelme) C:\Users\user.name>*labelme*

6. Select 'Open Dir' button in order to select and open the folder where we have stored the images to annotate.
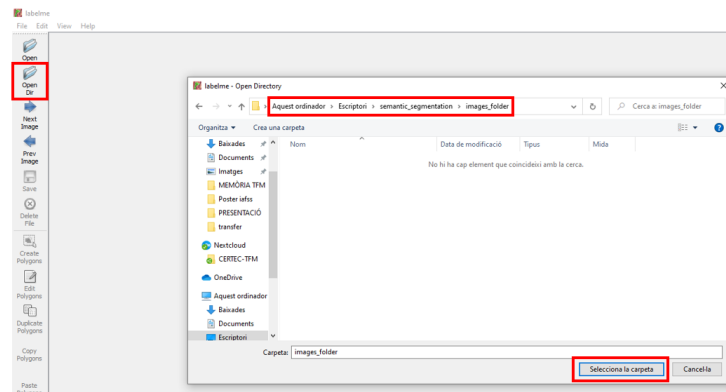

Figure 3. Select the folder directory of the images to annotate

7. Once the images are visualized in LabelMe, select the 'Create Polygons' button to start annotating, surrounding the image point by point until closing the polygon.

Figure 4. Image annotation process

8. Once the mask is created (the polygon is closed) a popup window will appear in order to define which class is that specific polygon, write down the class name and click 'OK'.
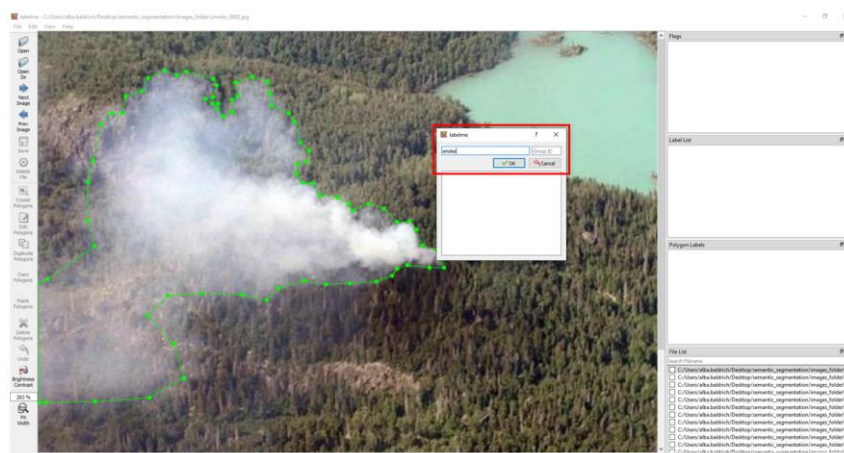

Figure 5. Class definition

9. If you need to edit any point of the mask annotated select 'Edit Polygon' button.

Figure 6. Edit mask

10. Save the json file of the annotated mask with the button 'Save' (or ctrl+S). Save it in the same folder and with the same name of the original image.
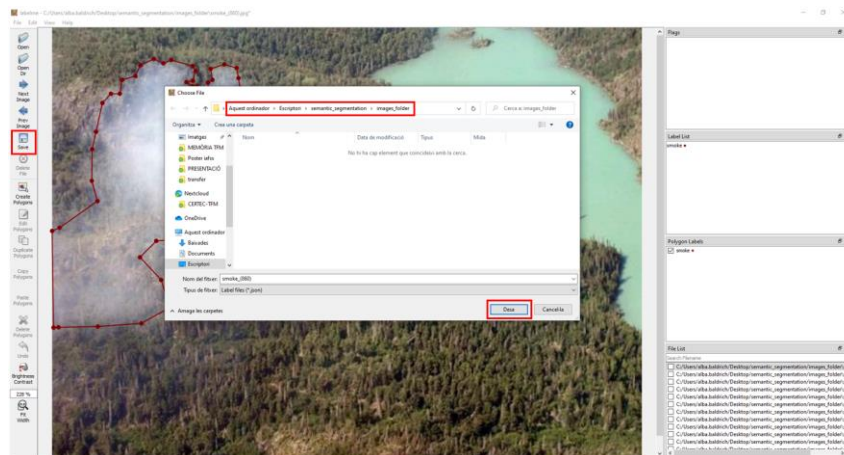

Figure 7. Save mask

11. Continue annotating the other images needed by restarting the process from point 7 to 10.

12. Open the labels.txt file, delete the predefined classes (except '__ignore__' and '_background_'), and write the desired class, in this case smoke.
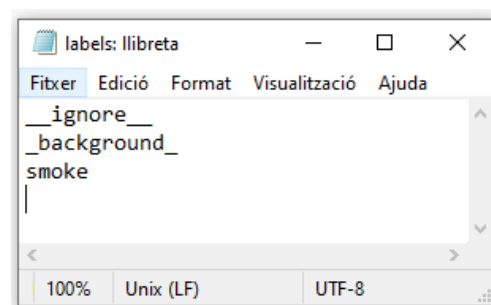   C:\Users\alba.baldrich\Desktop\semantic_segmentation\labels.txt

Figure 8. Class definition

13. Access to the *semantic_segmentation* directory in the console.

(labelme) C:\Users\user.name>*cd C:\Users\user.name\Desktop\semantic_segmentation*

14. Convert it to VOC format dataset by writing the following code in the command prompt and press enter.

(labelme) *C:\Users\user.name\Desktop\semantic_segmentation>python labelme2voc.py images_folder save_folder --labels labels.txt*

*image_folder is the folder where the json files are and *save_folder* is the folder where you want to save the masks.

15. The *save_folder* is created with four subfolders containing the original images in jpeg, the json file of each mask, the ground truth mask of each image in png format and a jpg image with the class (smoke) and background visualization.
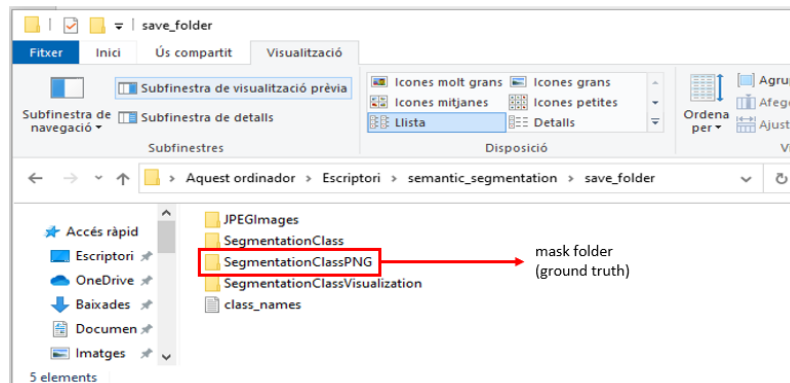

Figure 9. LabelMe annotation output

Output example:

Figure 10. JPEG original image

Figure 11. PNG of the ground truth created

Figure 12. JPG image with class visualization