

# Documentation

## Deep network for pixel-level classification of S2 patches (v1.1)

### > Installation (Ubuntu):

>If docker is not already installed on your system, please follow these steps:

[Install Docker Engine on Ubuntu](#) | [Docker Documentation](#)

>To start the docker, please look at the Example section bellow.

### > Available options:

Argument	Description	Default value
--action	action to perform. One among "full", "extract_data", "train", "predict"	
--criterion	loss criterion used during training	cross_entropy
--pretrained	enable pretrained backbone	False
--bands	comma separated list of bands. Ex: B01,B02,B12	
--selected-classes	comma separated id of classes. Ex: 1,2,5,8	1
--data_aug	enable data augmentation	False
--simplified	enable simplified label representation for the SEN12MS dataset	False
-b, --batch-size	batch size for training	2
--epochs	number of epochs for training	20
--patch_size	size of input data for training	256
--lr	initial learning rate	0,0001
--model_format	model save format : pytorch or onnx	pytorch
--model_file	model file name	
--cpu_only	disable gpu use	False
--disable_use_min_max	disable the use of a file to perform normalization on data and perform per image normalization instead (normalization file is automatically created during the "extract_data" step)	False

## > Volumes to mount and associated paths:

Path in container	Description
/Data/images	directory with .tif images OR directory containing multiple directories with .tif images
/Data/labels	directory with .tif annotation images OR directory containing multiple directories with .tif annotation images
/Data/models/pretrained	directory with a pretrained .pth backbone (optionnal, required if « -pretrained » argument is used)
/Data/models	directory where created models are stored
/Data/save_dir	directory where extracted patches are stored during extracting time and loaded during training time
/Data/pred_images	directory with .tif images used during inference time
/Data/pred_images_out	directory where images are stored after inference

## > Constraints:

> Image files must be .tif images with “s2” appearing once in their name. For each image file, the corresponding annotation must be a .tif file with the same name, except for the “s2” being replaced by “lc”.

> Annotation images are .tif images having each pixel equal to its corresponding label id.

## > Example:

```
> docker run -v USER_PATH1:/Data/images -v USER_PATH2:/Data/labels -v  
USER_PATH3:/Data/models/pretrained -v USER_PATH4:/Data/models -v  
USER_PATH5:/Data/save_dir -v USER_PATH6:/Data/pred_images -v  
USER_PATH7:/Data/pred_images_out --gpus=all -it pix_classif:1.1 --  
bands=B02,B03,B04,B08,B11,B12 --action full --lr=0.0001 -b=2 --selected-classes=1 --  
patch_size=256 --epochs=50 --model_format=pytorch --data_aug
```