

SVM method

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The segmentation of multispectral and thermal images with the SVM method

La segmentation des images multispectrales et thermiques avec la méthode SVM

The objective of the study

In this part, we used the SVM method for image segmentation on multi-spectral and thermal images (with seven wavelengths, see the folder of images and masks in tif). The goal was to separate the leaves of trees (apple trees) from the rest in a vegetarian environment on multi-spectral and thermal images.

We were able to load only a small part of our dataset. The data annotation was done on the ERDAS@IMAGE software. This annotation was done manually, we selected the pixels corresponding to the leaves of the trees

We have improved the SVM model used By [Bérengère Mathieu - published 10/31/2017] ("<https://makina-corpus.com/@search?Creator=bmt>") for locating an object within an image. We adapted this model to our dataset.

B1...B6 are the different wavelengths.

The different manipulations :

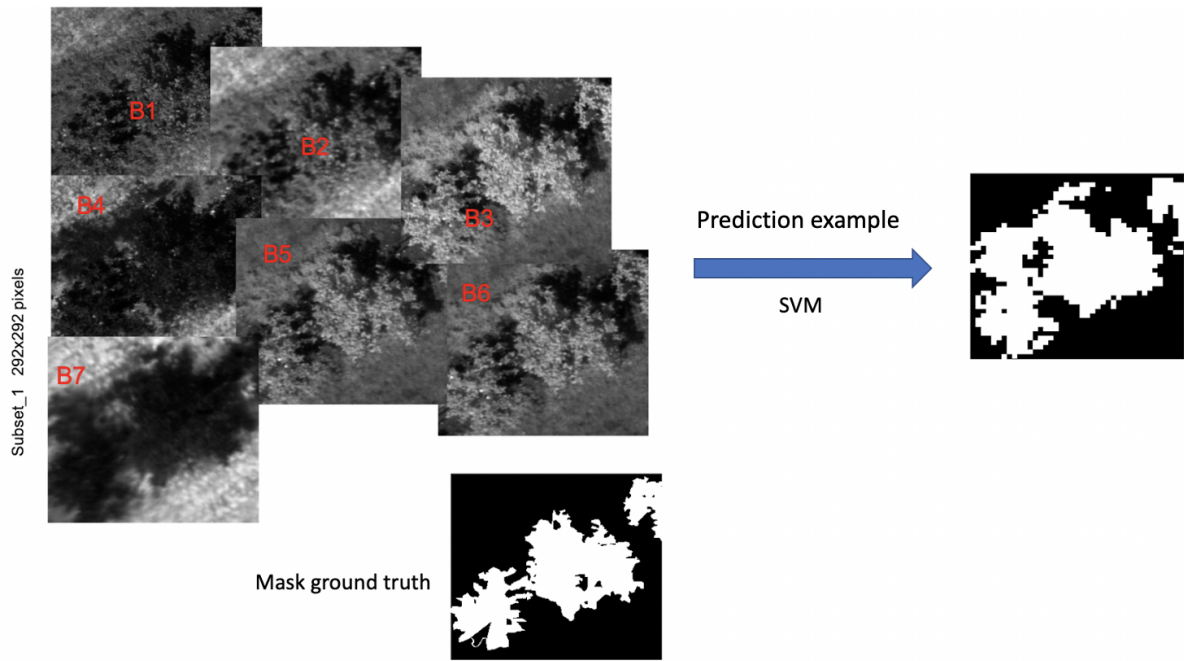
we have stored part of our dataset in the data -> data train and data test or validation folder.

Training model SVM :

To train the SVM model, simply add *Train = True* for the *train_test* function in the *main.py* script. This script uses the *Construct_XY* function of the training vectors of the script *train_SVM*. This script simply loads the masks, it preserves the most interesting superpixels, then saves them in NumPy.npy format in two vector *X* inputs and in *Y* output.

Prediction with SVM:

For the prediction we use *pred.py*, the masks will be saved in the same files of the tif images.



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Figure 1: visual segmentation diagram with SVM

Accuracy of trained model SVM:

To measure the accuracy or the prediction accuracy of the trained model, we use the measurement function in the *measure_Functions.py* script.

We used the script *train_test_SVM.ipynb* to apply the different manipulations and display them on jupyter with the command “jupyter notebook”.

I would like to thank everyone who contributed to this study.

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