Análise de Imagens de Sensoriamento Remoto - 2018.2 Assignment #3

Using the images provided from *2D Semantic Labeling - Vaihingen data* (more info <u>here</u>), implement in <u>*Keras Framework*</u> a *Fully Convolutional Network (FCN)* for semantic image segmentation. Use a variation of <u>U-Net</u> network architecture.

You must train the network model by using the *Image_Train.tif* and *Reference_Train.tif* images and it must be evaluated on the *Image_Test.tif* and *Reference_Test.tif* images.

To select the training samples to train the FCN model, you must extract patches of *w*-by-*w* size from the *Image_Train* and *Reference_Train* images. The number of patches and the *w* size need to be chosen based on the *input size* of network.

Your report must present the classification results as label images, and report accuracy metrics (*overall* and *average class accuracies*, *F1-score*). Results of the following configuration must be reported:

- Using *skip connections: Hint:* use *keras.layers.Concatenate*.
- Using *Dropout* in deconvolutional layers.
- Changing the size of the extracted patches.

Hints:
- Convert reference images to label images.
- Try patch sizes (*w*): *32, 64 and 128.*