

Test task for CV-engineer position

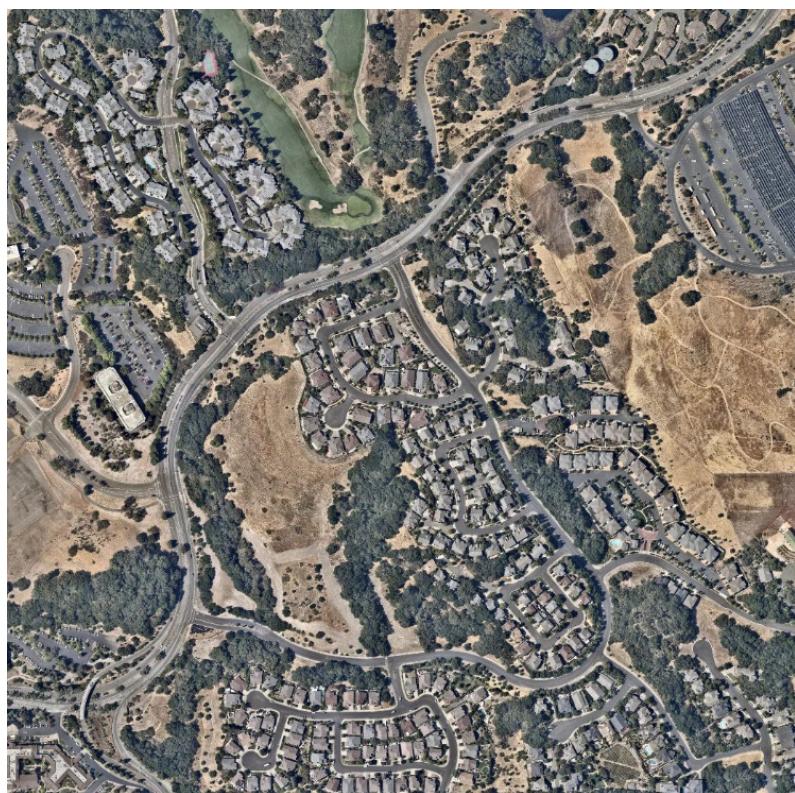
Building segmentation using high resolution satellite imagery

The dataset is available through the link:

[https://drive.google.com/file/d/1nWGf-8HohimC0_-7i6V_Q5ImI-R1_gPc/view?
usp=sharing](https://drive.google.com/file/d/1nWGf-8HohimC0_-7i6V_Q5ImI-R1_gPc/view?usp=sharing)

Dataset description:

The folder with the dataset includes two study sites (Ventura and Santa-Rosa). RGB channels are in the separate files that are in georeferenced “tif” format. The markup (ground truth labels) is in the “all.tif” file. The spatial resolution (meters in each pixel) equals 0.57 meters. The satellite imagery is obtained from WorldView satellite.



Satellite image for the study area of Santa-Rosa

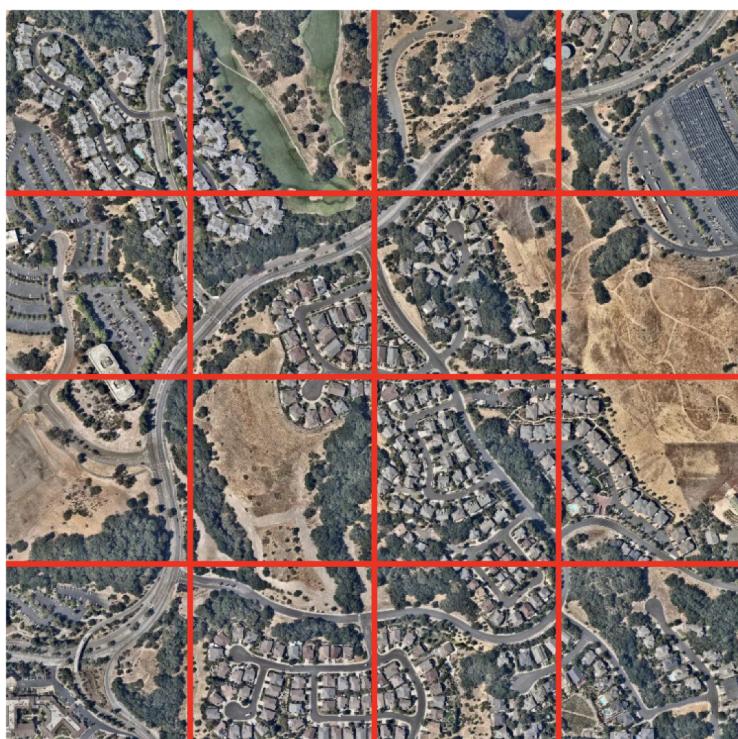
Task: There is a binary semantic segmentation task. You are supposed to train a convolutional neural network (CNN) to predict building mask using satellite imagery. The final prediction results should be presented for the test

area (you should choose the test area from the dataset) according to the appropriate evaluation metrics.

The solution is expected to be with extension “.py” or “.ipynb”.

Note:

Unlike data from the general domain, in Earth remote sensing applications, images are typically up to several thousand pixels both in width and height. Reducing the size of an image so that the neural network model can work with it at the expense of its quality is not always the optimal choice. An alternative approach is to create crops from the initial large satellite image (for instance, 512*512 pixels – you are welcome to choose the size). Then you can handle these smaller patches the same as in the general domain.



Example of initial satellite image splitting into smaller crop for CNN training