Invision AI - Machine Learning Exercise

In this exercise you will implement a Fully Convolutional Neural Network to classify each pixel in an aerial image as roof or non-roof.

You are asked to implement the following network:

Input RGB Image -> Conv 3x3, 16 filters -> ReLu ->

Conv 5x5, 16 filters-> ReLu -> Max Pooling ->

Conv 3x3, 32 filters -> ReLu -> Transposed Conv 2x2, 32 filters ->

Conv 3x3, 16 filters -> Output

Requirements:

- **Versioning:** Initialize a git repository to version your code, and add commits with descriptive commit messages as you make progress while solving the exercise
- **Hardware and processing constraints**
  - Assume that the GPU used for training and prediction cannot process patches larger than 512x512x3 as the input at a time and design your algorithms accordingly
- **Source code**
  - Place the training code in the file train.py and prediction in prediction.py
  - Include a short README.md file explaining how to run your code
  - Make use of functions and modularization as you see fits best the solution. Group re-used code into functions and write short docstrings for each
- **Frameworks and Libraries**
  - You can use pytorch or TensorFlow, as well as libraries such as scipy for image manipulation
- **Results:** Once you have a model trained, run prediction on image.tif and save the output in a png or jpeg file. Include the latter in your submission.

IMPORTANT: Place your code and results in a zip file and email it to us at the **latest 24 hours before the interview**.

If you have any question don't hesitate to contact us.

Thank you and good luck!

The Invision AI Team