WRITEUP HOMEWORK 4
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Architecture:

For my fully connected shallow classifier I just used two fully connected layer, the first one from 1472 to 512 (dimensions), the second one from 512 to 21. I used relu nonlinearity in between them.

For my dense classifier, I created two convolution layers and loaded the weights of the fully connected layers from the shallow net on them. Hence, I ended with convultions of dimensions (1472,512,1,1) and (512,21,1,1). After each convolution layer I used a relu nonlinearity.

Training procedure:
For training in the segmentation task (train_seg), I followed the following steps:
- Moved data and models to gpu (if available)
- Extracted zoomout features for images
- Trained the dense classifier with the classic sequence of (optimizer.zero_grad, model.forward(features), loss calculation, loss.backward, optimizer.step)
- For cross_entropy2d loss, I used weights equal to inversese class frequency.

Model accuracy
With 10 epochs, I obtained the following results:

Accuracy: 68.10714483774876
Accuracy Class: 27.202993688935486
Mean IU: 14.353739038375805
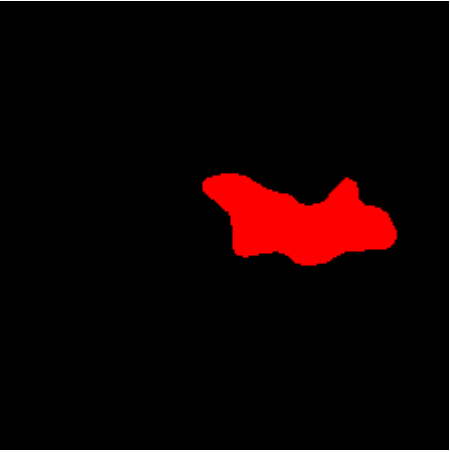FWAV Accuracy: 57.5071407551926

Example output on validation images
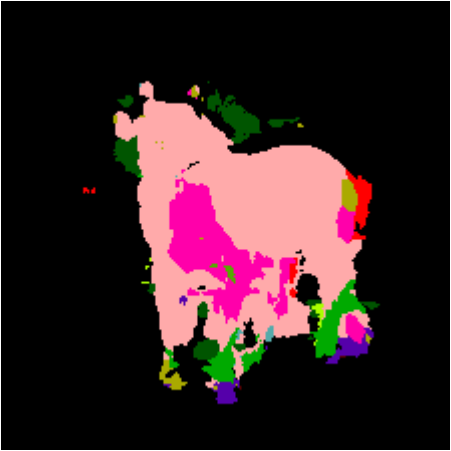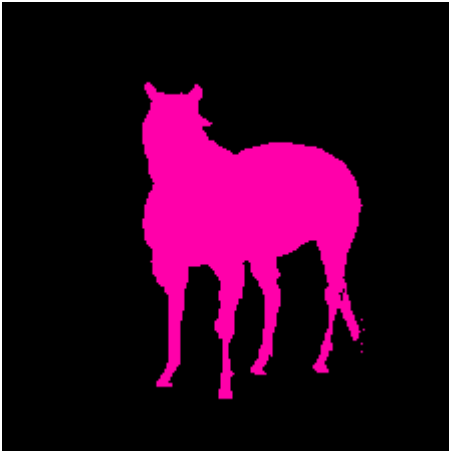(order: image, ground truth, predicted segmentation)

im_1_3_.png

im_4_8_.png

img_7_4.png

img_27_2.png