CS 6476 Project 6

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Parts 4 & 5: mIoU of different models

Add each of the following (keeping the changes as you move to the next row):

	Training mIoU	Validation mIoU
Simple Segmentation Net (no pretrained weights)	0.3806	0.3545
+ ImageNet-Pretrained backbone	0.5709	0.5260
+ Data augmentation	0.5364	0.5600
ImageNet-Pretrained PSPNet w/ Data Aug. without PPM	0.6364	0.6490
+ PSPNet with PPM	0.6289	0.6415
+ PSPNet with auxiliary loss	0.6400	0.6332

Parts 4 & 5: Per class IoUs

Report your model's IoU for the 11 Camvid classes (you can find the order they are listed in at dataset_lists/camvid-11/camvid-11_names.txt):

Class Index	Class name	Simple Segmentation Net Class IoU	PSPNet Class IoU
0	Building	0.8563	0.8974
1	Tree	0.8583	0.8990
2	Sky	0.8676	0.9176
3	Car	0.6912	0.7998
4	SignSymbol	0.0000	0.0000
5	Road	0.9080	0.9465
6	Pedestrian	0.2183	0.2421
7	Fence	0.5942	0.6935
8	Column_Pole	0.0000	0.0556

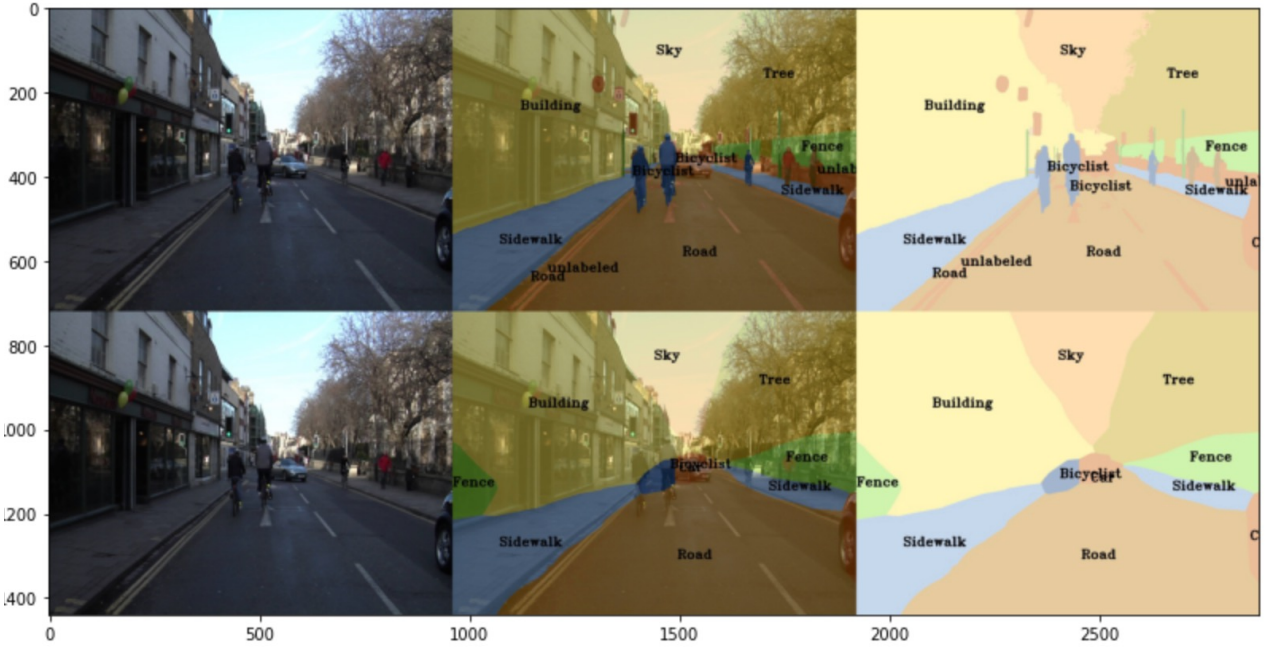
Parts 4 & 5: Most difficult classes

[Which classes have the lowest mIoU? Why might they be the most difficult? Provide an example RGB image from Camvid that illustrates your point]

SignSymbol has the lowest mIoU. It is the most difficult because of its small size which can be easily omitted.

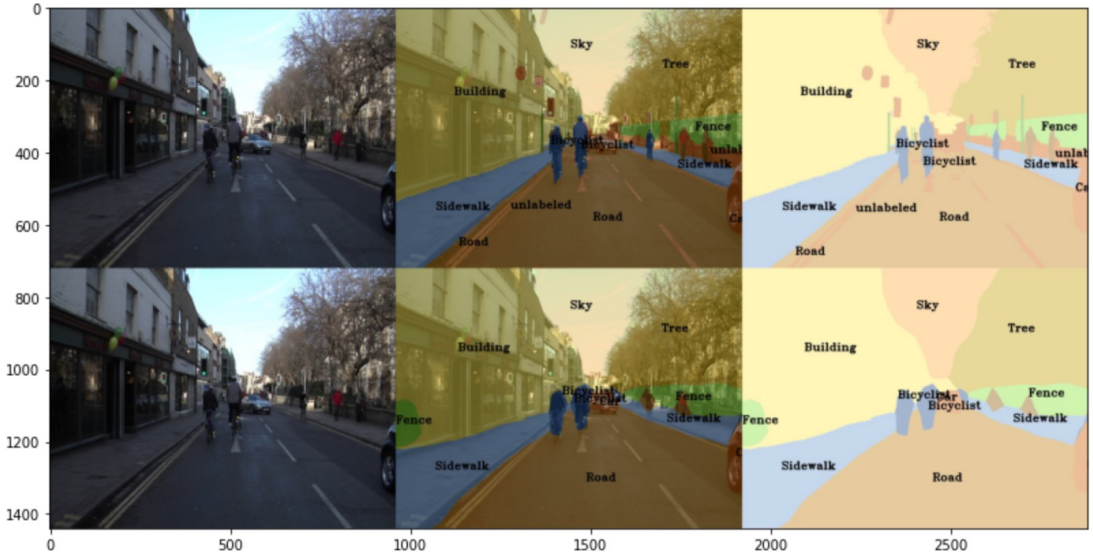
Part 4: Simple segmentation net qualitative results

[Paste a figure of the generated semantic segmentation from Colab. It should be a 2x3 grid, with ground truth on the top row, and your predictions on the bottom row.]



Part 5: PSPNet qualitative results

[Paste a figure of the generated semantic segmentation from Colab. It should be a 2x3 grid, with ground truth on the top row, and your predictions on the bottom row.]



Part 6: Transfer Learning

Report your model's IoU for the Kitti Dataset.

	mIoU	mAcc/	allAcc
Train result	0.943	0.97	0.982
Val result	0.9214	0.9551	0.9756

Class Index	Class name	iou	accuracy
0	Road	0.8720	0.9229
1	Not_Road	0.9708	0.9872

Part 6: Transfer Learning

Compare the training loss generated when training on Kitti dataset and Camvid dataset. Which decreases at a faster rate? If Camvid or Kitti training loss decreases at a faster rate than the other, why do you think this happened? Or, if the loss decreases at a similar rate, why do you think that is so?

Training loss generated by Kitti dataset decreases at a faster rate.
This happened because for Kitti dataset, we used pretrained model, so that our model does not have to o through the training process. That is why Kitti training starts and ends at a smaller loss value.