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)	0.4833	0.3724
+ ImageNet-Pretrained backbone	0.5825	0.5521
+ Data augmentation	0.4923	0.4954
ImageNet-Pretrained PSPNet w/ Data Aug. without PPM	0.5680	0.5745
+ PSPNet with PPM	0.5738	0.5937
+ PSPNet with auxiliary loss	0.5801	0.5922

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	0.8429	0.9024
1	Tree	0.7870	0.9916
2	Sky	0.8610	0.9083
3	Car	0.4952	0.7493
4	SignSymbol	0.0000	0.0000
5	Road	0.8867	0.9568
6	Pedestrian	0.0458	0.0630
7	Fence	0.3201	0.3522
8	Column_Pole	0.0000	0.0000
9	Sidewalk	0.6756	0.8278
10	Bicyclist	0.0000	0.0000

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]
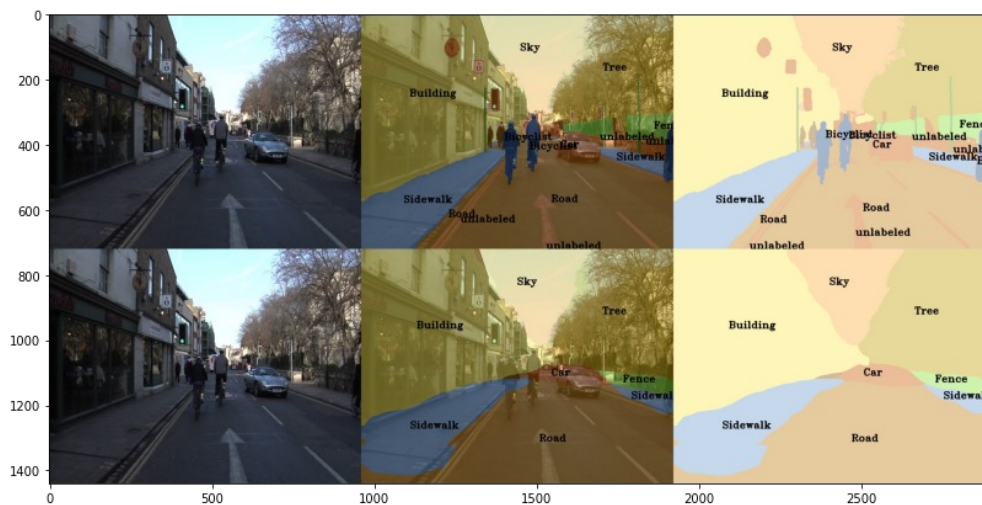
SignSymbol and Column Pole

The column poles are aligned with the vertical edges
of the building, making them hard to distinguish.

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.]
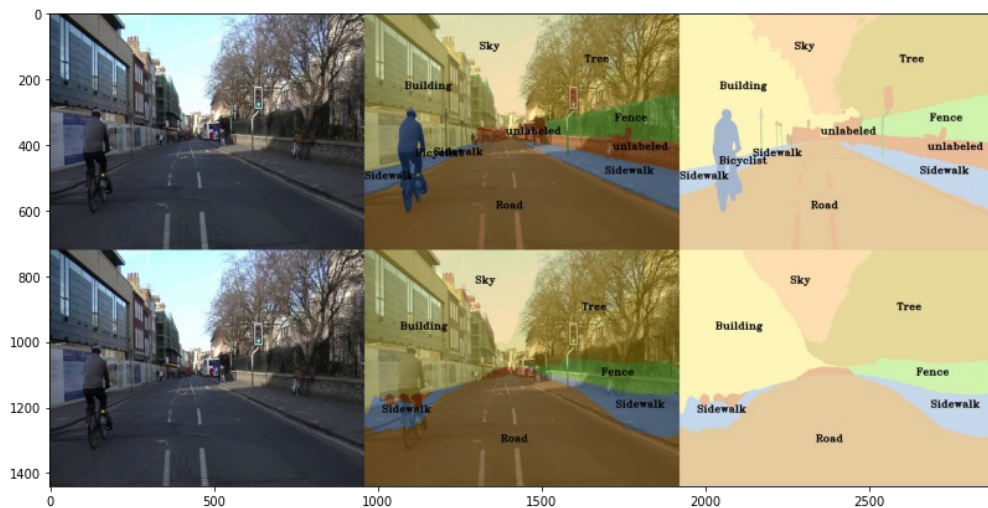
Part 6: Transfer Learning

Report your model's IoU for the Kitti Dataset.

	mIoU	mAcc/	allAcc
Train result	0.8612	0.9238	0.9475
Val result	0.8562	0.9242	0.9611

Class Index	Class name	iou	accuracy
0	Road	0.8021	0.8524
1	Not_Road	0.9420	0.9725

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?

The training loss of Kitti is faster, since it was trained on the pre-trained model, and the number of classes is 2, which is much smaller than 11 from Camvid.