Please use this report template, and upload it in the PDF format. Reports in other forms/formats will result in ZERO point. Reports written in either Chinese or English is acceptable. The length of your report should NOT exceed 6 pages (**excluding bonus**).

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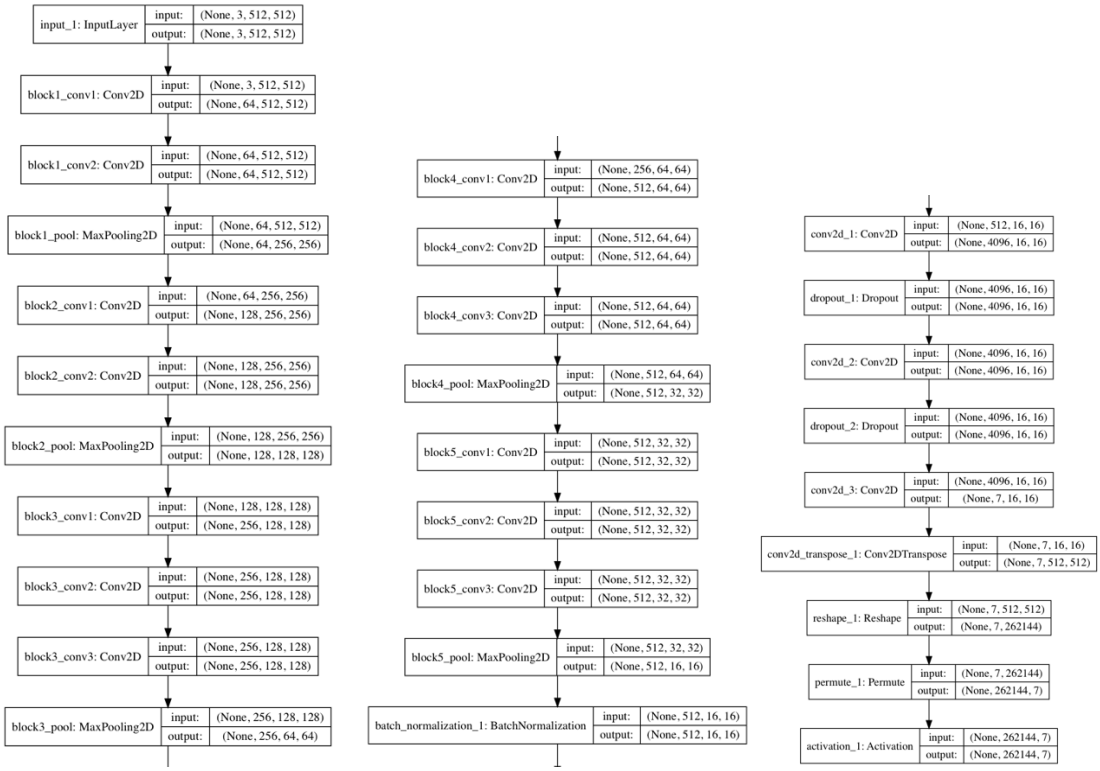
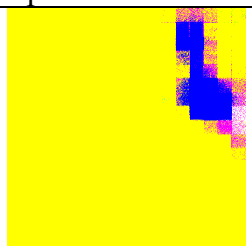
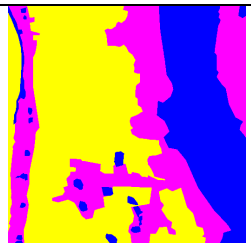
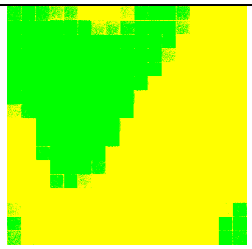
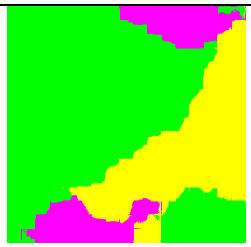
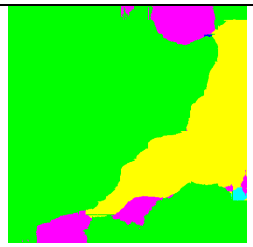
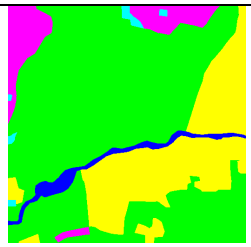
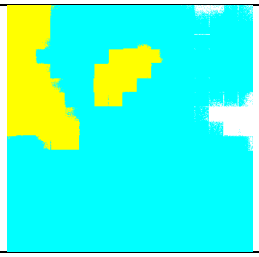
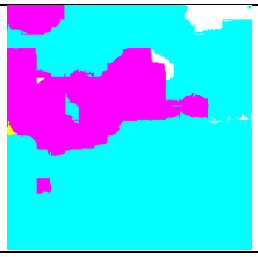
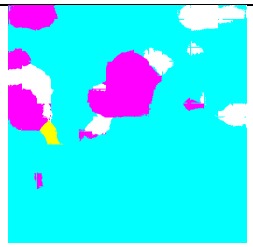
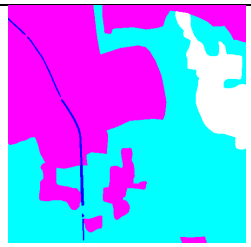
1. (5%) Print the network architecture of your VGG16-FCN32s model.



從左到右分別為淺至深：

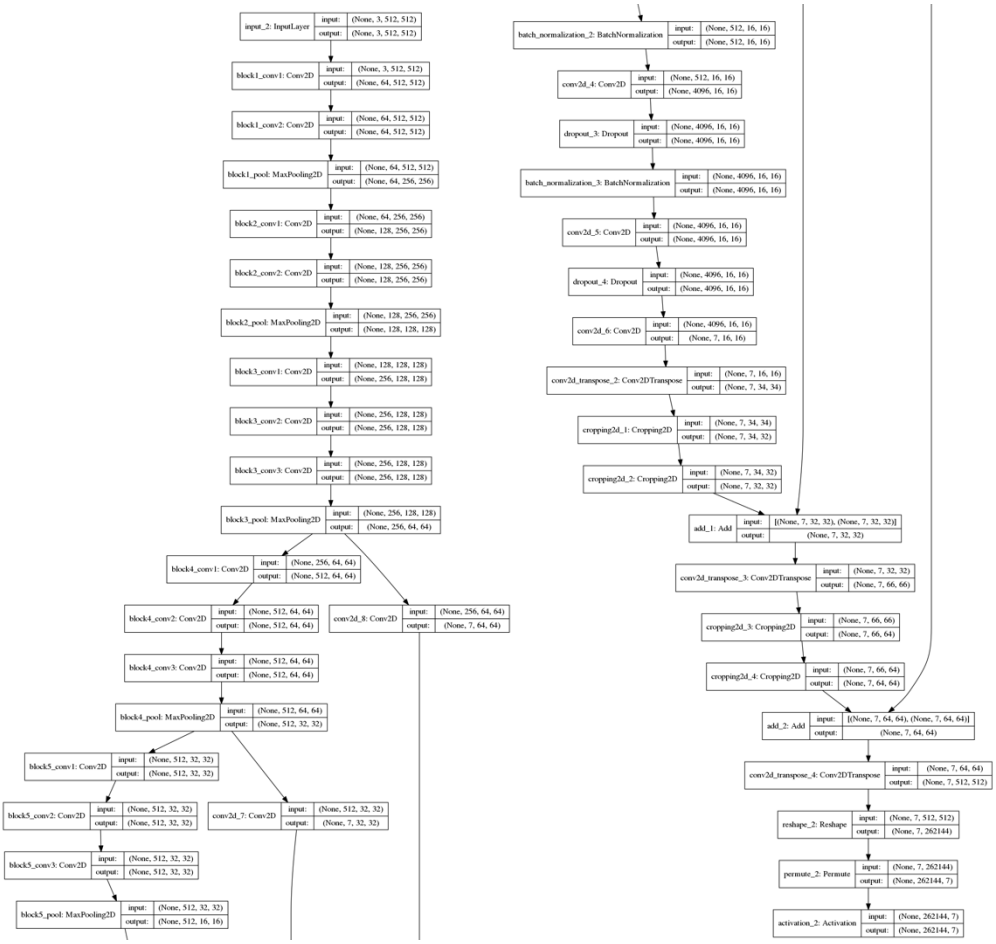
- 第一張圖包含了 VGG 前 3 個 block (2 conv + 1 max pooling)
- 第二張圖為後兩個 block (3 conv + 1 max pooling)
- 第三張圖將原本 VGG16 最後三層 Dense 換成 Conv layer, 最後以 Conv Transpose 將資料轉回為原圖片大小。

2. (10%) Show the predicted segmentation mask of validation/0008_sat.jpg, validation/0097_sat.jpg, validation/0107_sat.jpg during the early, middle, and the final stage during the training stage. (For example, results of 1st, 10th, 20th epoch)

	Epoch=1	Epoch=10	Epoch=20	Ground Truth
Val_ 0008				
Val_ 0097				
Val_ 0107				

3. (15%) Implement an improved model which performs better than your baseline model. Print the network architecture of this model.

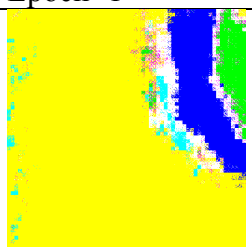
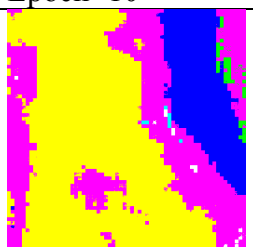
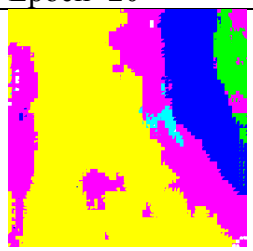
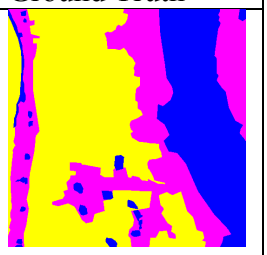
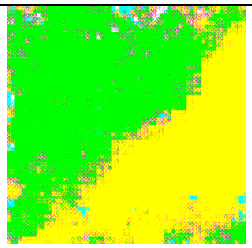
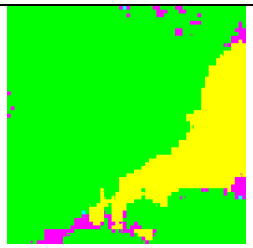
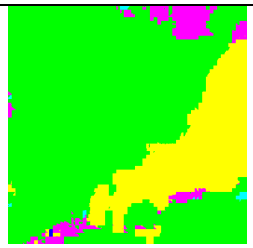
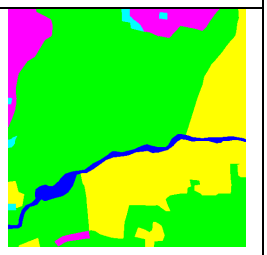
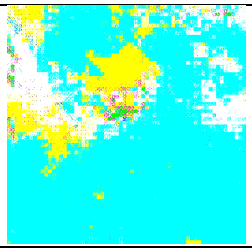
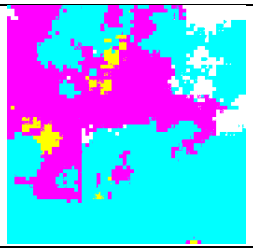
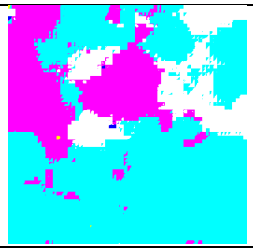
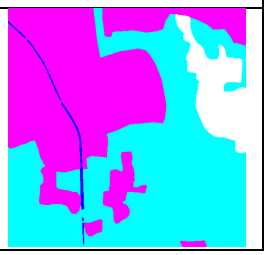
參考論文並與同學討論，使用 VGG16-FCN8[ref]架構來作為改善的模型架構:



在 VGG16 base，FCN8 將 block4 及 block3 的 output 直接拉到作為底層的 input 也考慮到連接到深層，並加入 crop 及 add 來修剪/ 串連不同 layer 的 input 。

4. (10%) Show the predicted segmentation mask of validation/0008_sat.jpg, validation/0097_sat.jpg, validation/0107_sat.jpg during the early, middle, and the final stage during the training process of this improved model.

VGG16-FCN8s

	Epoch=1	Epoch=10	Epoch=20	Ground Truth
Val_ 0008				
Val_ 0097				
Val_ 0107				

5. (15%) Report mIoU score of both models on the validation set. Discuss the reason why the improved model performs better than the baseline one. You may conduct some experiments and show some evidences to support your discussion.

Class #0 : 0.695, Class #1 : 0.867, Class #2 : 0.321
Class #3 : 0.773, Class #4 : 0.744, Class #5 : 0.614

Mean_iou : 0.669

Discussion :
這次使用的 base model 及 improved model 分別為 VGG16 base 的 FCN32 及 FCN8。因為 FCN8 除了考慮最後 block5 的 output, 其後還考慮進 block4, block3 的 output, 直觀上可以理解成 model 不僅考慮了一個全局來預測結果, 他也考慮進早期 pattern 的分類 ， 故可以有更多依據來預測結果， 效果也理當比 FCN32 好。