Landscape Classification

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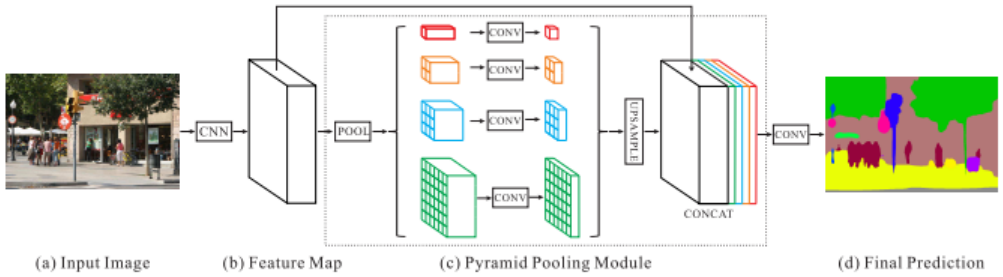
Problem

- Classify land types using satellite imagery
- Six land types of primary interest (water, rice field, paved road, vegetation, trees, and buildings/houses)
- (UCI ML Hackathon challenge)

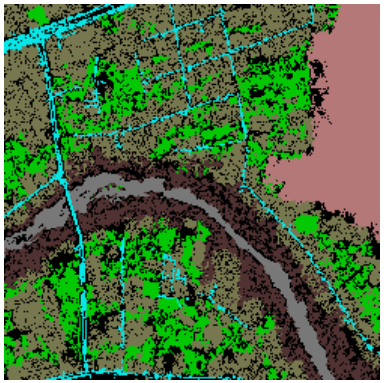
Model

- Use pretrained ResNet50 with dilated convolution as encoder
- PSPNet[1] as decoder, which aggregates global representation with Pyramid Pooling Module

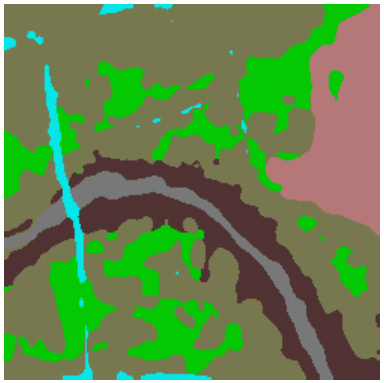


1 Zhao, Hengshuang, et al. "Pyramid scene parsing network." Proceedings of the IEEE conference on computer vision and pattern recognition. 2017.

Results



True segmentation



Predict segmentation

Pixels accuracy: 0.6879
Mean IoU: 0.5675

IoU
- Water: 0.7669
- Rice filed: 0.8634
- Paved Road: 0.2066
- Vegetation: 0.5572
- Trees: 0.4606
- Buildings: 0.5503

Conclusion

- Preparing data when there is few provided
- Find the right scales to preparing the data, e.g. how large to crop, where to crop, need rescaling?
- When predicting, it may be better to use a smaller image