

Pine Plantation Identification using NAIP imagery and a CNN



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Introduction

- Pine plantations are difficult to distinguish from natural evergreen forest
- Disturbance datasets under-quantify plantation presence on the landscape (Fagan 2018)

Sampling

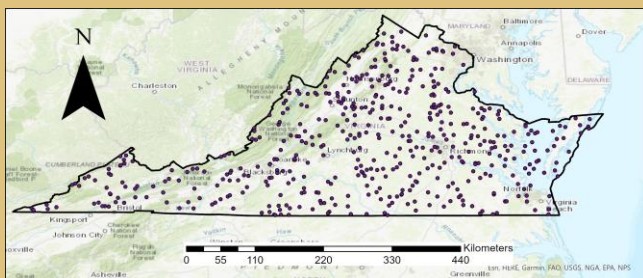


Figure 1. Image Sampling Locations.

Sampling (cont.)



Figure 2. Example training images. (L->R: Forest (n = 245), non-forest (n = 190), and plantation class (n = 35))

Classification Methods

1. Manual Interpretation
2. Image Normalization (min-max)
3. 80-20 Train-Test split
4. Build CNN
 1. 3 Convolutions
 1. Zero-padded
 2. Max-pooled

Results & Discussion

- 71.58% classifier accuracy
- Shows promise as a classification method
- *Should* get better with more data

Future Steps

- Better Training Dataset
- Implement on a larger scale

References

Fagan, M.E., Morton, D.C., Cook, B.D., Masek, J., Zhao, F., Nelson, R.F., Huang, C., 2018. Mapping pine plantations in the southeastern U.S. using structural, spectral, and temporal remote sensing data. *Remote Sens. Environ.* 216, 415–426. <https://doi.org/10.1016/j.rse.2018.07.007>