



Green Spaces - the challenge



- Natural Capital. What % of UK gardens are covered in vegetation?



BlueSky aerial imagery via Public Sector Mapping Agreement (PSMA)



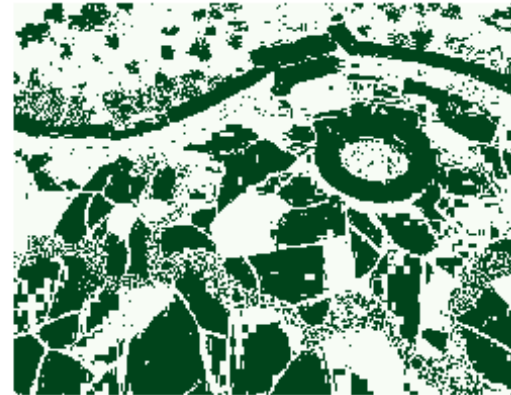
Ordnance Survey MasterMap Greenspace polygons define private gardens

Why?

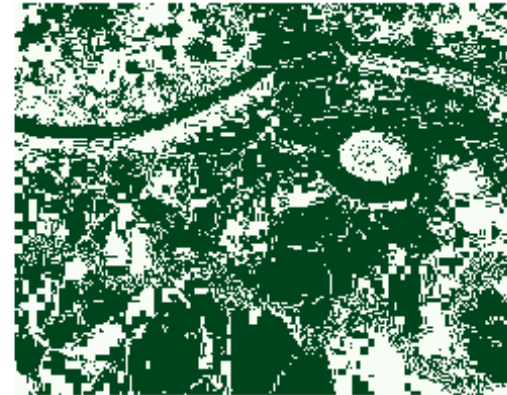


- Flood risk mapping
 - Estimate the benefits of sustainable urban drainage such as vegetation.
- Urban heat calculation
 - Improving accuracy by including vegetation coverage
- House price predictions
 - Preplace current estimation of green space
- Carbon footprint estimation
 - Differentiate between trees and grass

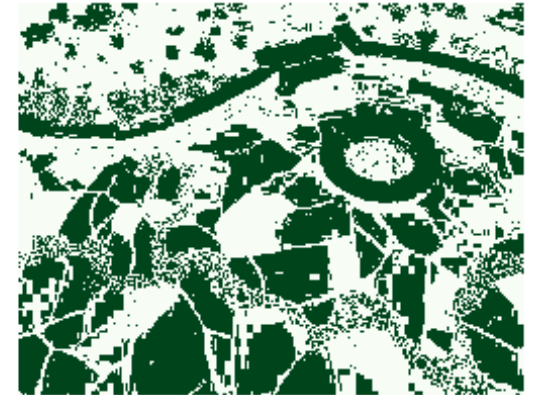
Off the shelf approaches are not perfect!



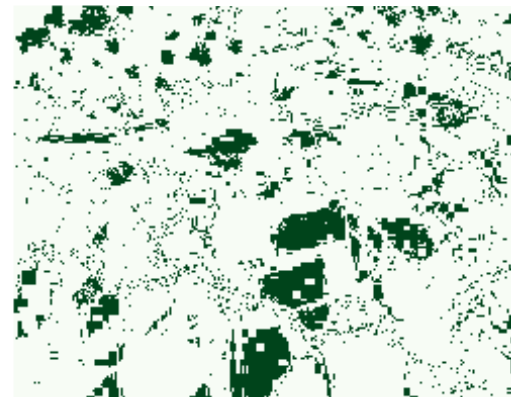
vNDVI (48.3%)



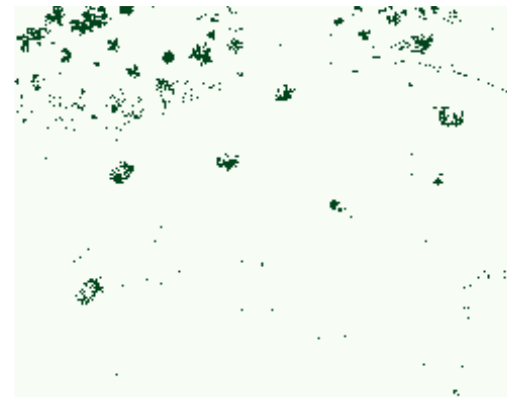
GLI (63.7%)



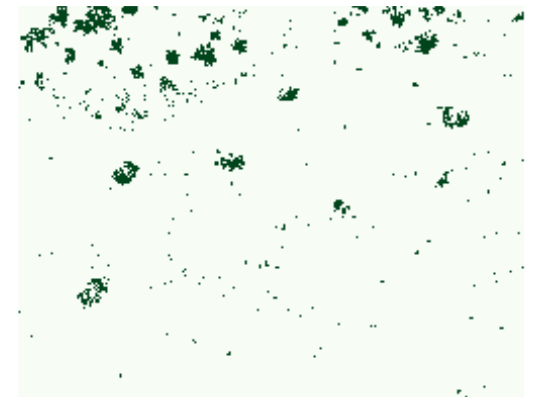
VARI (48.1%)



HSV (16.2%)



Lab(a*) (2.5%)

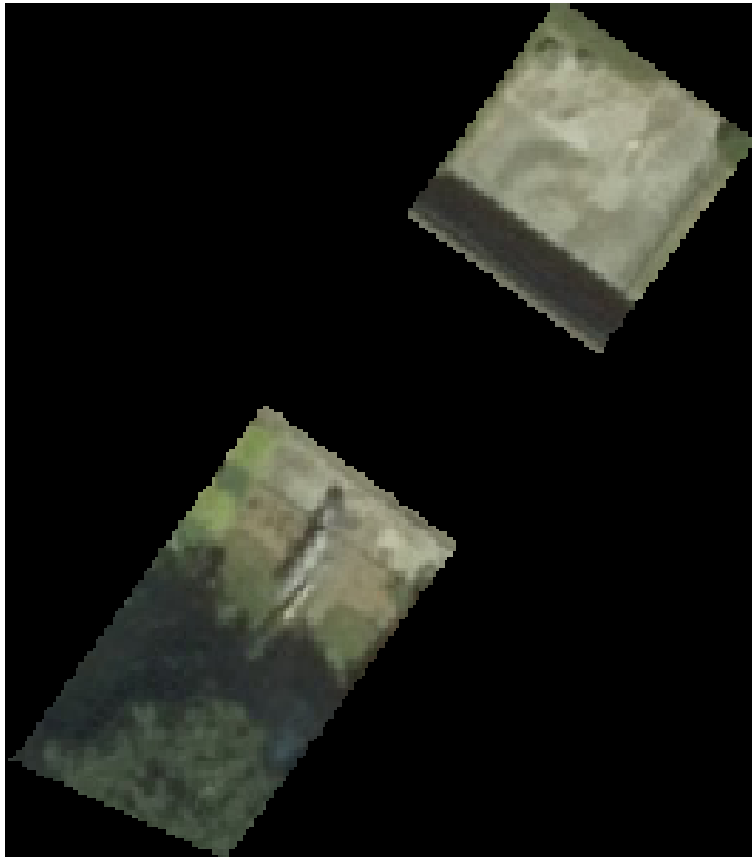


Lab(a*b*) (3.3%)

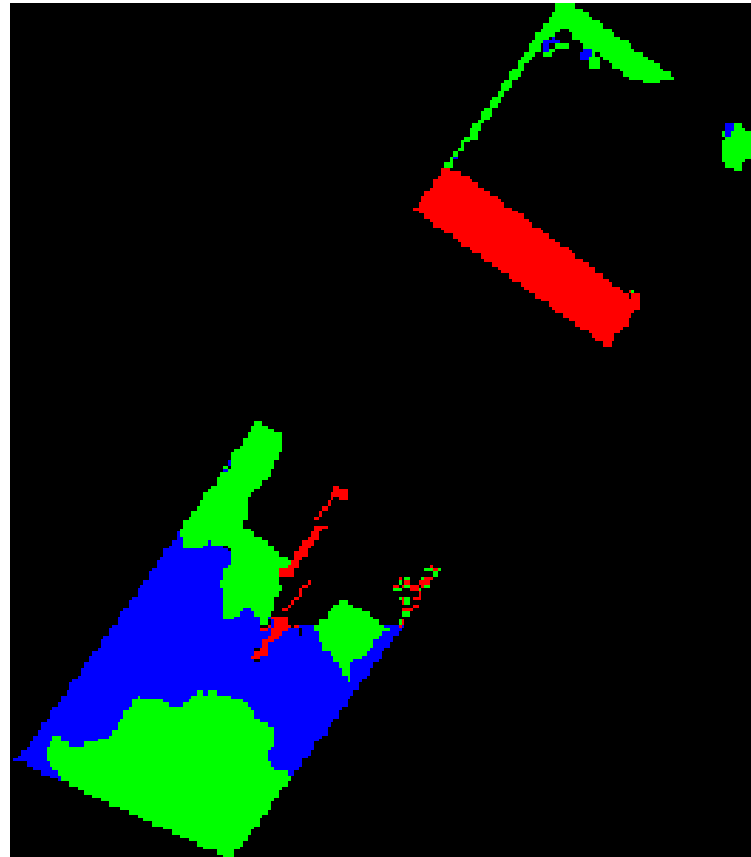
We built a neural network classifier



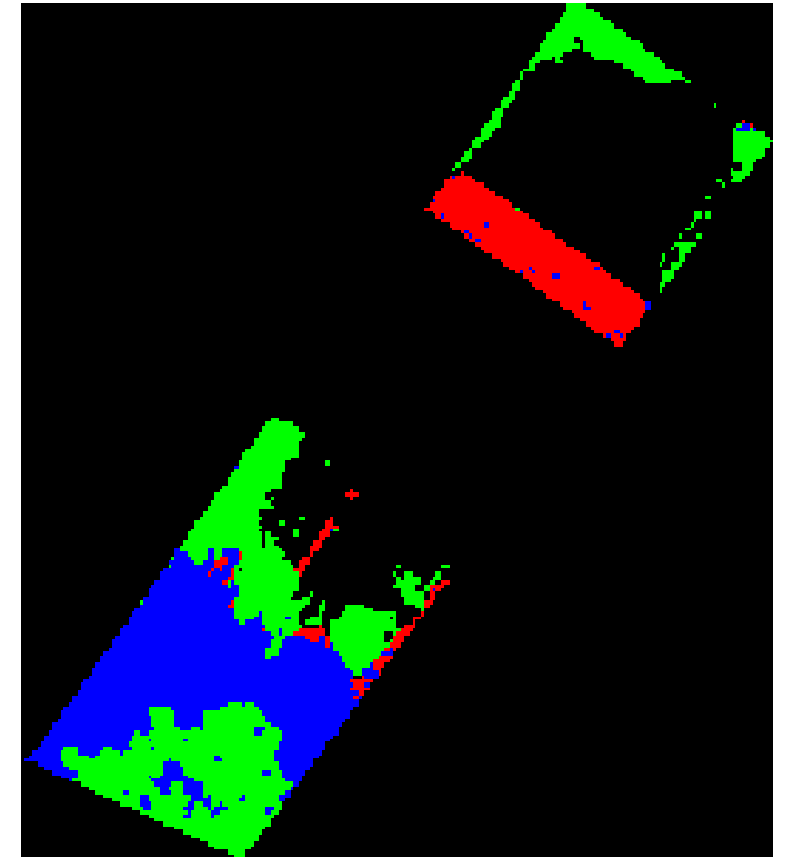
Original Image



The truth



Our prediction

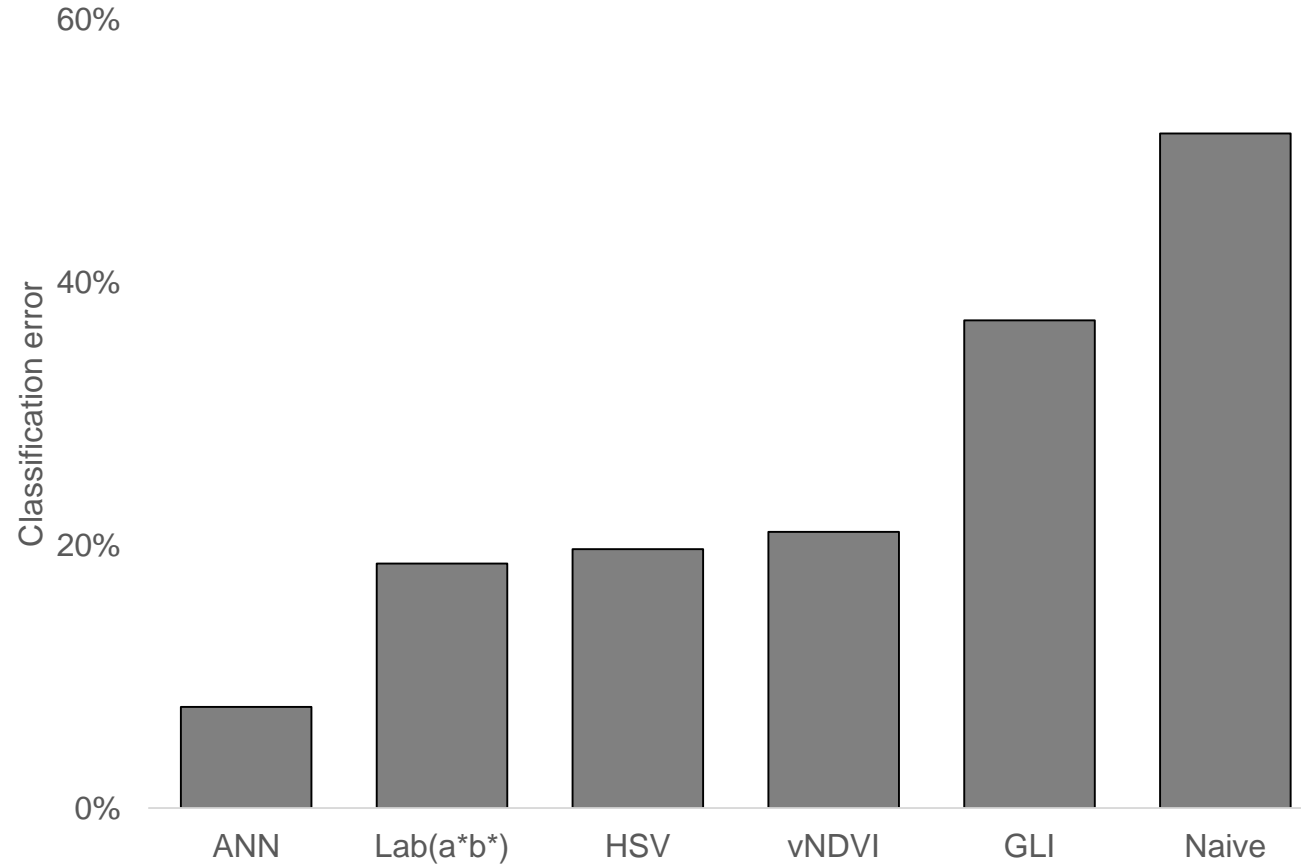


 vegetation

 vegetation in shade

 urban in shade

Neural network classifier - results



Estimate 61.6% of urban residential gardens is vegetation

Classification error across labelled images