

Using Computer Vision to Detect Housing Units from Satellite Imagery

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- Still doing listing in rural areas
- Listing harder in rural areas
- Why?
 - Roads have no names
 - Houses have no numbers
 - Large clusters
 - Personal safety
 - Boundary issues





- Can we use
 - High resolution satellite imagery
 - And computer vision

• To create rural housing unit frames?



Data Sources

- Functional Map of the World
- NC building footprints
- Satellite images



- **Phase 1**: Identify buildings
 - (Chew et al 2018)

• Phase 2: Determine which are residential



Output: % residential



Train

• Global fMoW data

Test

 On buildings from Wake County

Fine-Tune

Using Wake County images

Output: % residential







Annual of the state



Truth: Non-Res Prediction: Non-Res Truth: Residential Prediction: Residential



Truth: Residential Prediction: Non-Res

Accuracy, by Model



True Positives + True Negatives

Cases

Next Steps

- Apply to other NC counties
- Apply to other states
- Evaluate coverage bias
- What else can we learn about households?
- Find funding



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