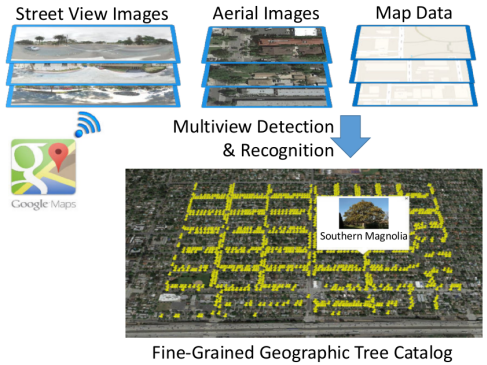
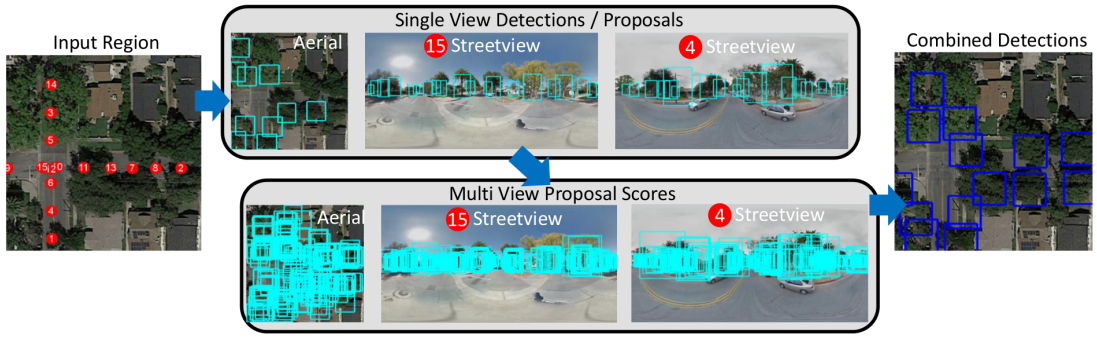
Cataloging Public Objects Using Aerial and Street-Level Images Urban Trees

J. D. Wegner, S. Branson, D. Hall, K. Schindler, and P. Perona (CVPR 2016)





- Public tree cataloguing (of location and species of trees) system from online maps
- Motivation:
  - Large-scale tree mapping project called Opentreemap
  - Currently carried out with specialized imagery (LiDAR, hyperspectral) that is collected ad-hoc, and/or with in-person visits
- det2geo: detects the set of locations of objects of a given category
- geo2cat: computes the fine-grained category of the 3D object at a given location
- Challenge: Combining multiple aerial and street-level views
- Adapting state-of-the-art CNN-based object detectors and classifiers
- Pasadena Urban Trees dataset: 80,000 trees with geographic and species annotations
- Multi-view recognition over single view
  - Mean average precision from 42% to 71% for tree detection
  - Accuracy from 70% to 80% for tree species recognition