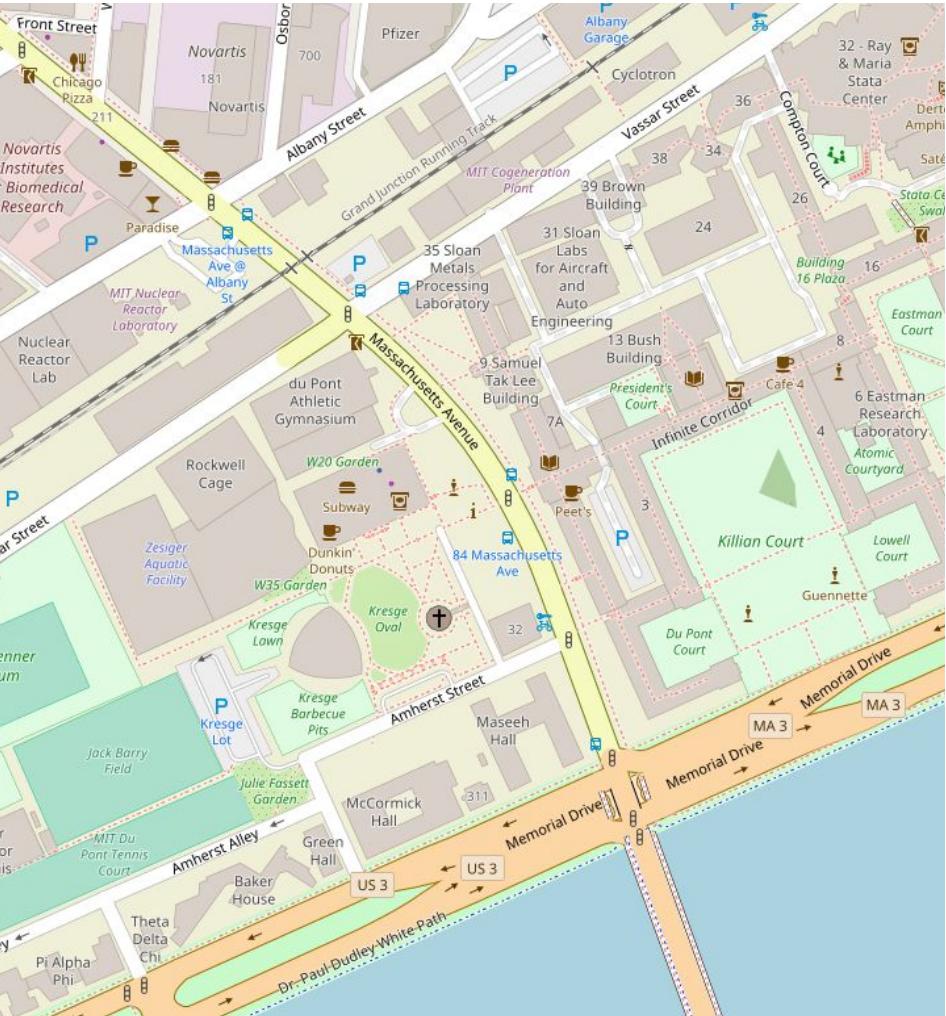
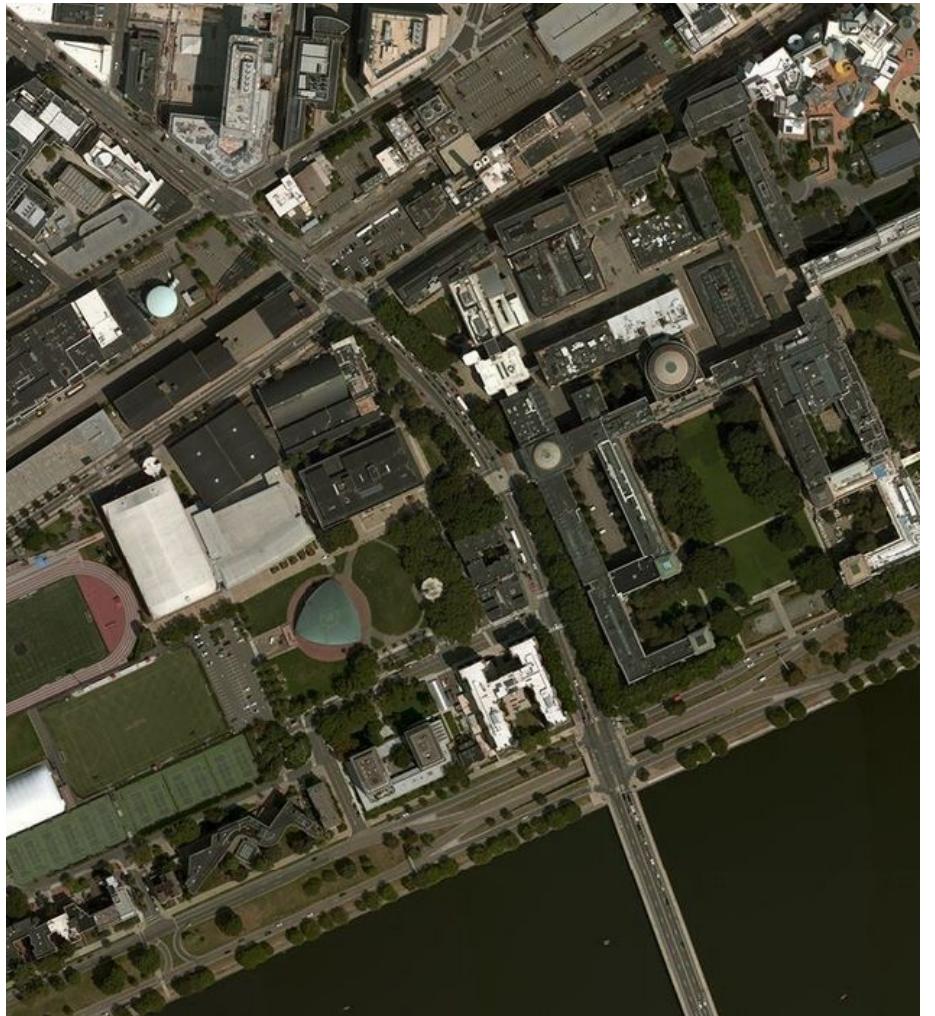
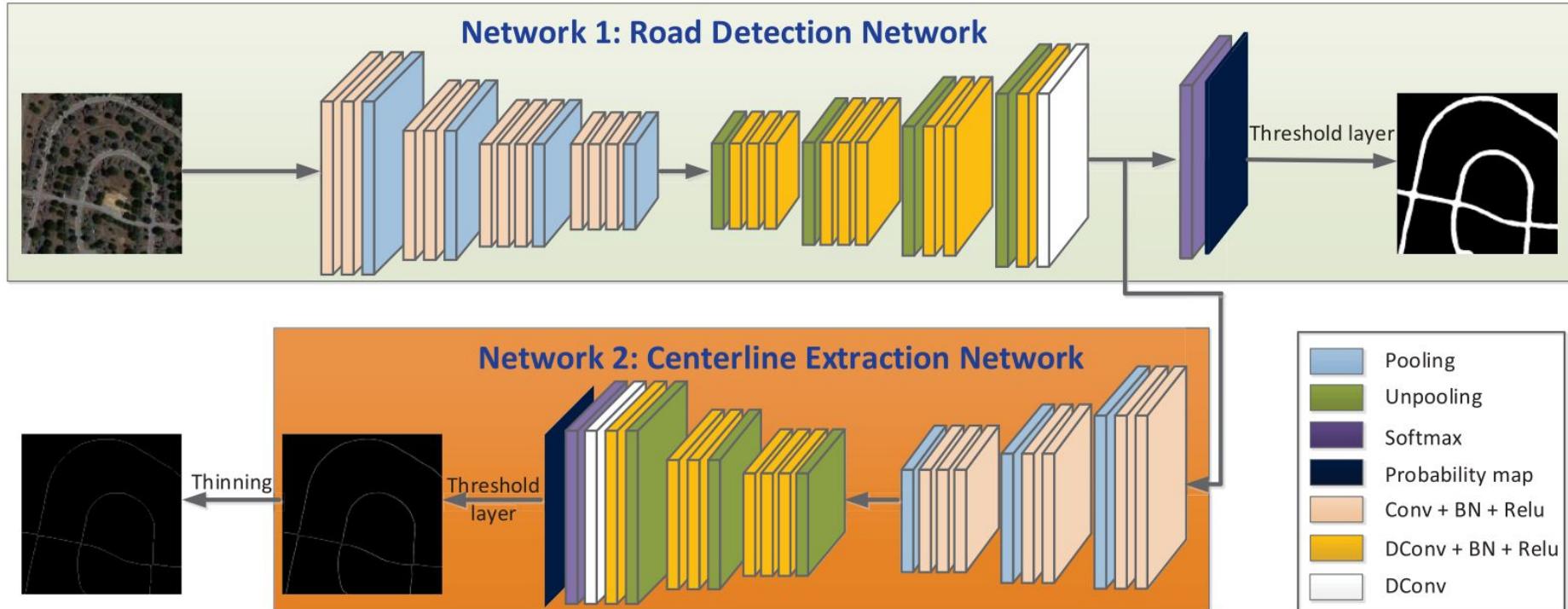


Map Inference with Satellite Imagery

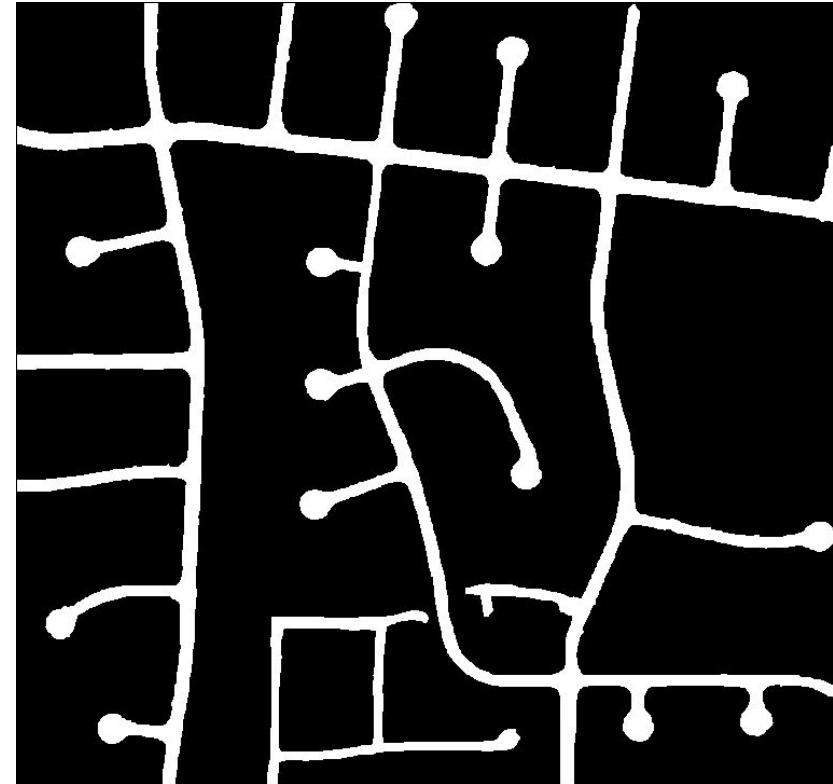
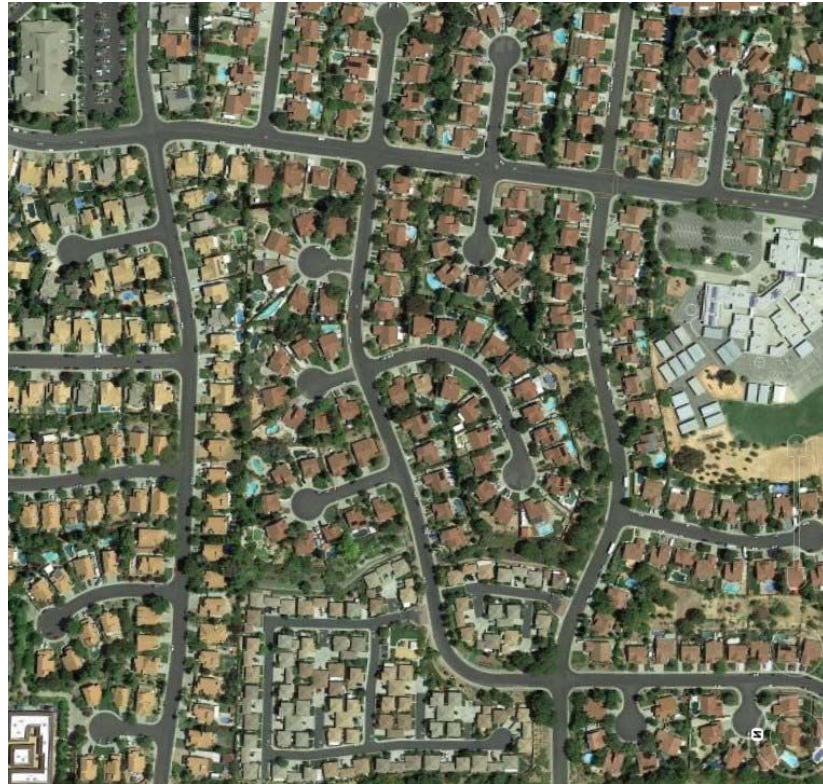




Segmentation

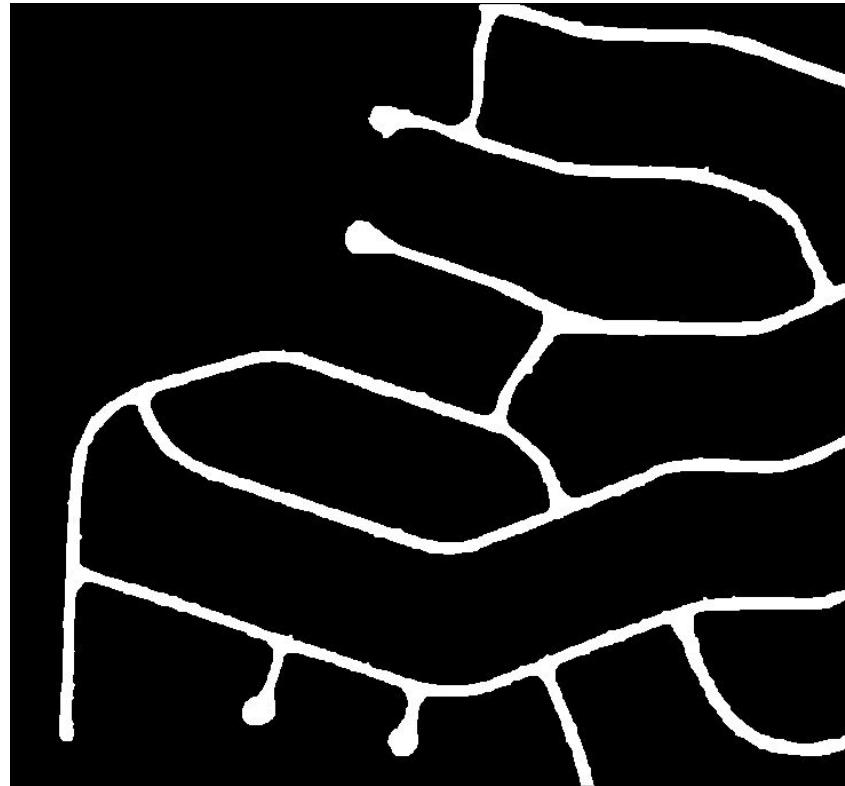


Segmentation



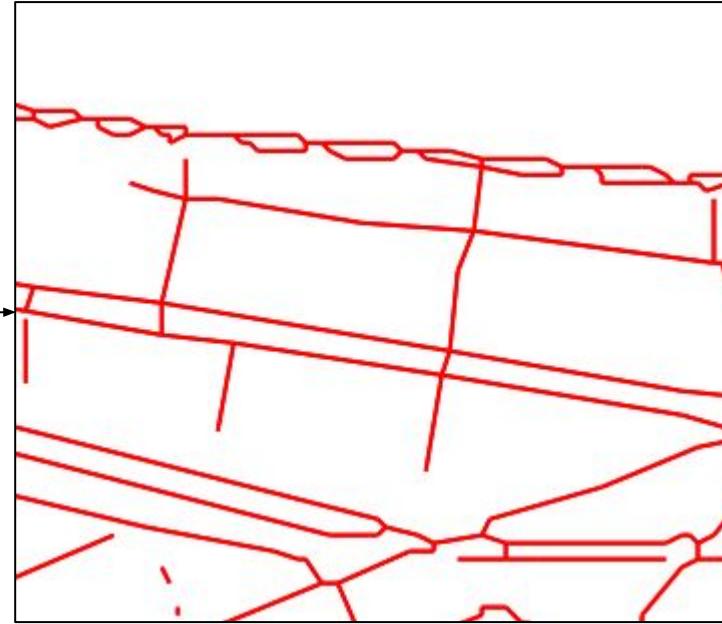
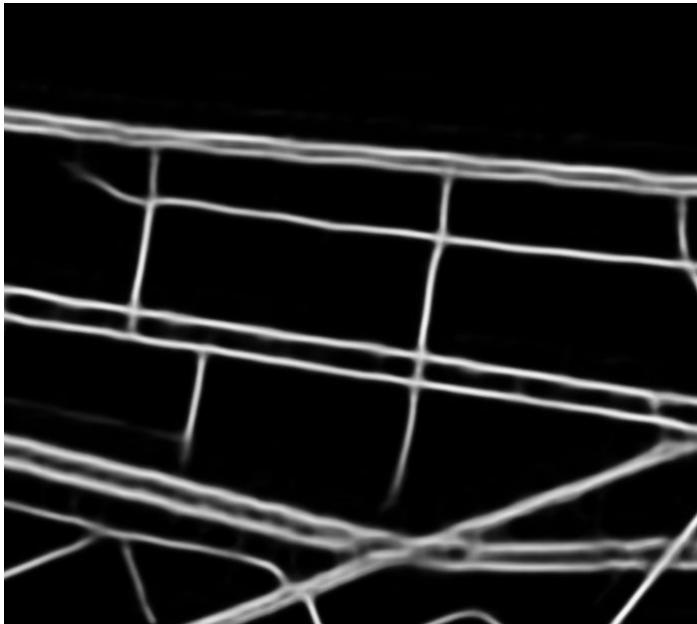
Guangliang Cheng, Ying Wang et al. "Automatic Road Detection and Centerline Extraction via Cascaded End-To-End CNN"
In IEEE Transactions on Geoscience and Remote Sensing (2017).

Segmentation



Guangliang Cheng, Ying Wang et al. "Automatic Road Detection and Centerline Extraction via Cascaded End-To-End CNN"
In IEEE Transactions on Geoscience and Remote Sensing (2017).

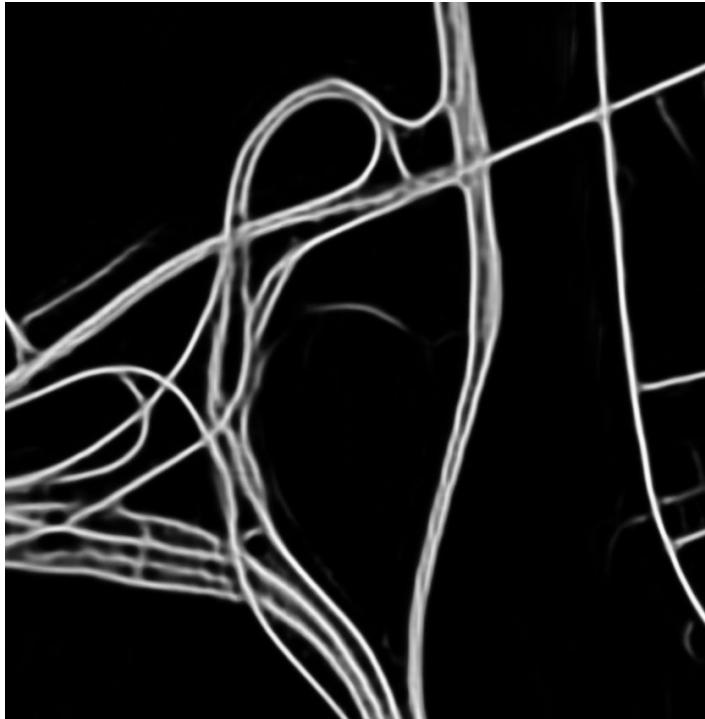
Segmentation



Noise in the CNN output lead to incorrect topology in the extracted graph

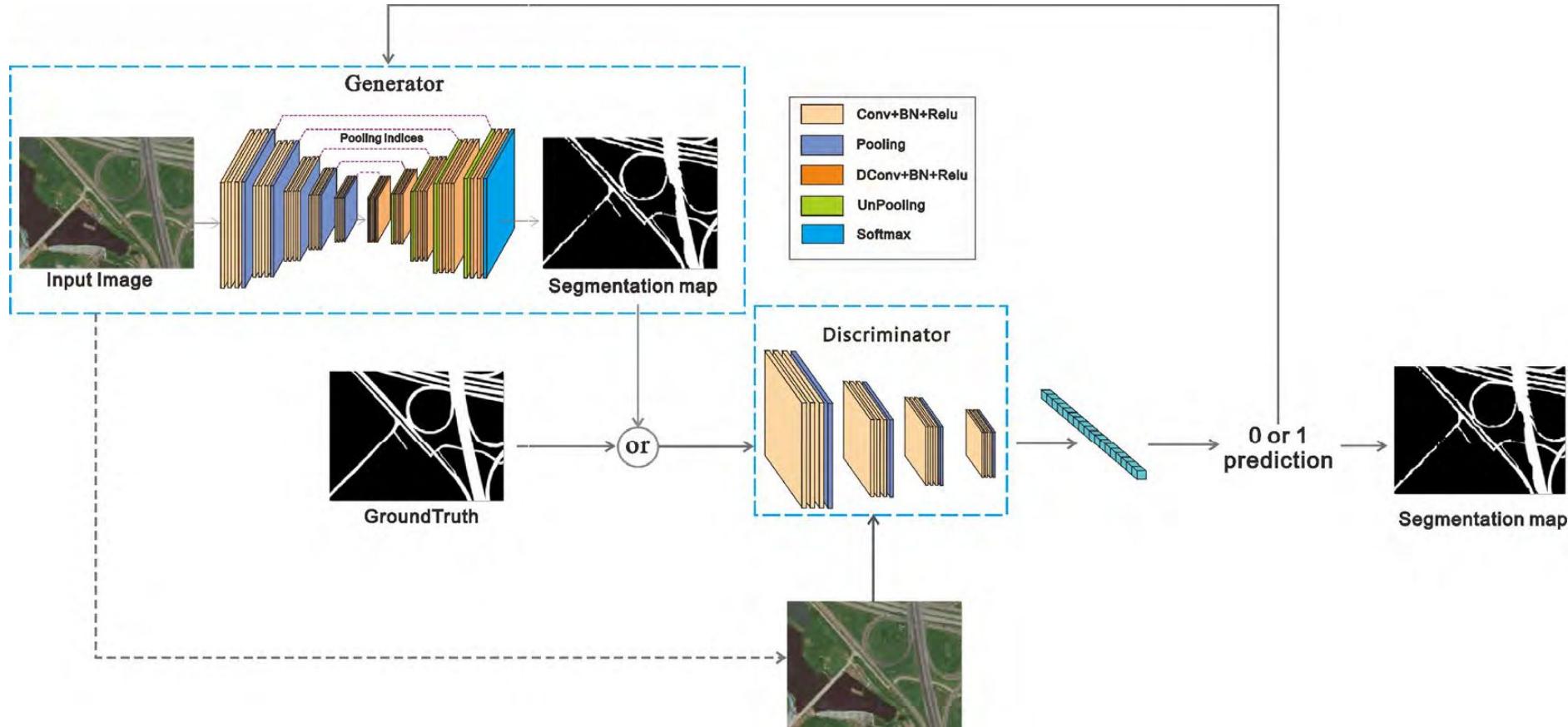
- Missing roads
- Frequent connections between parallel roads

Segmentation



Complex intersections lead to very noisy graphs

Segmentation: Adversarial Training

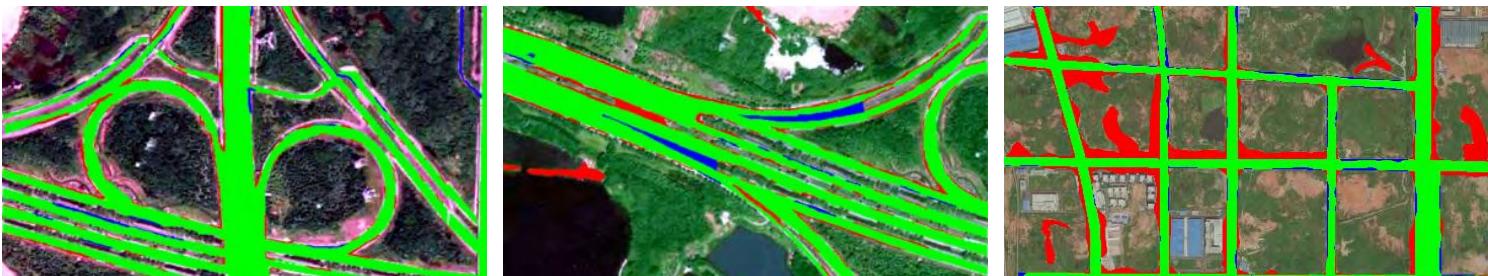


Segmentation: Adversarial Training

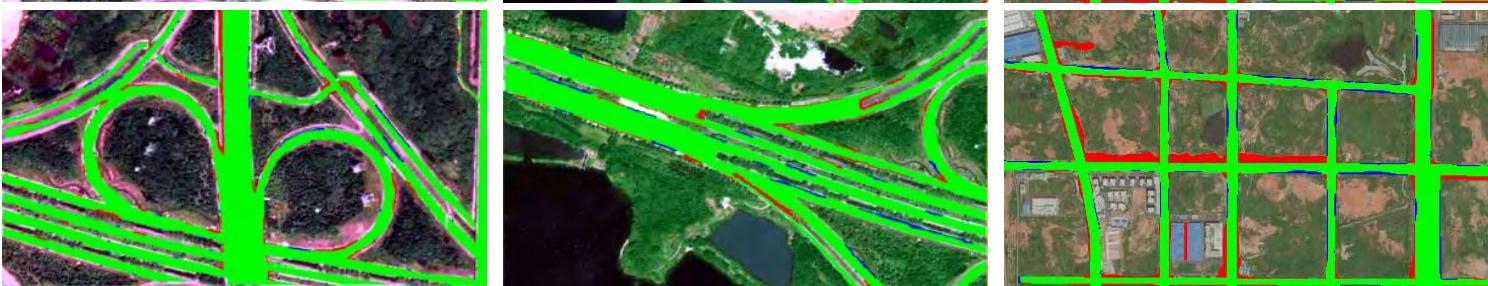
Imagery



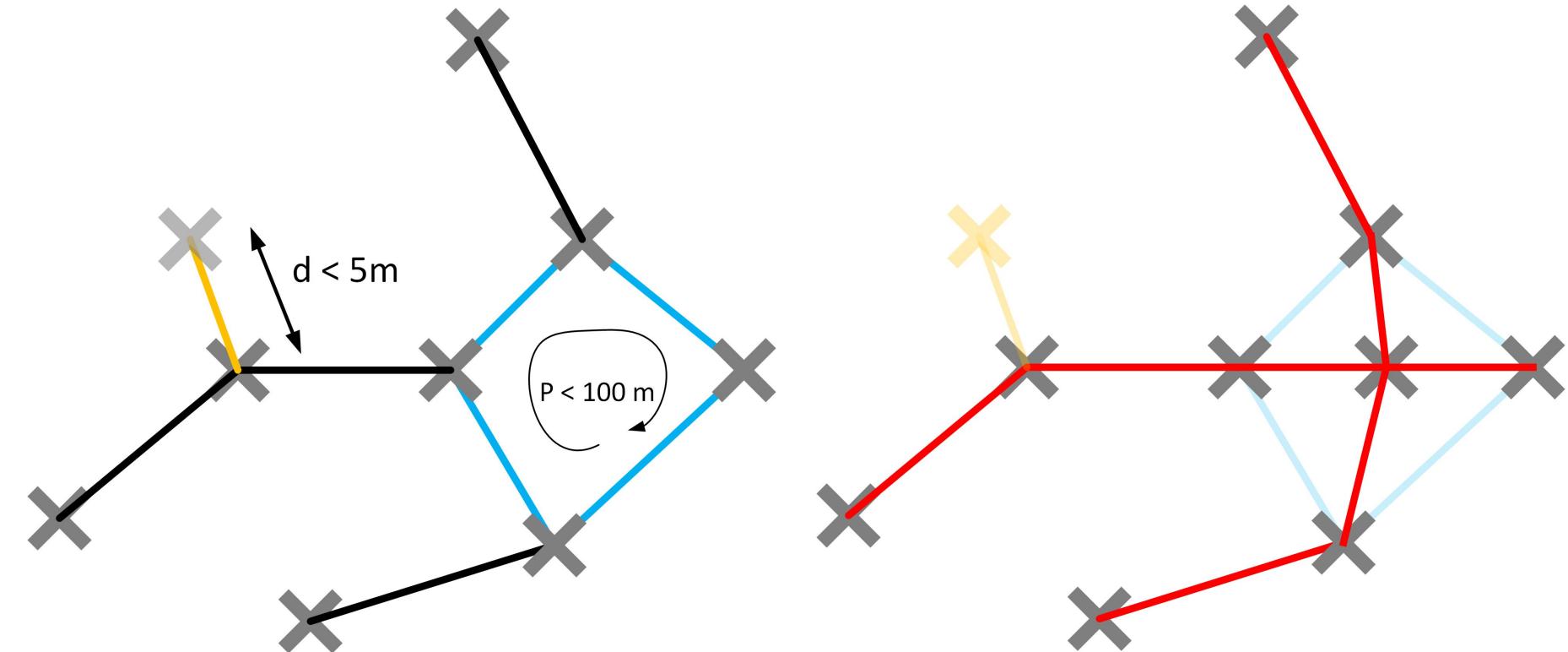
Segnet



GAN



Segmentation: Refinement



Segmentation: Refinement

- After applying refinement heuristics, we want to infer missing connections
- Search method generates candidate connections; classifier evaluates them



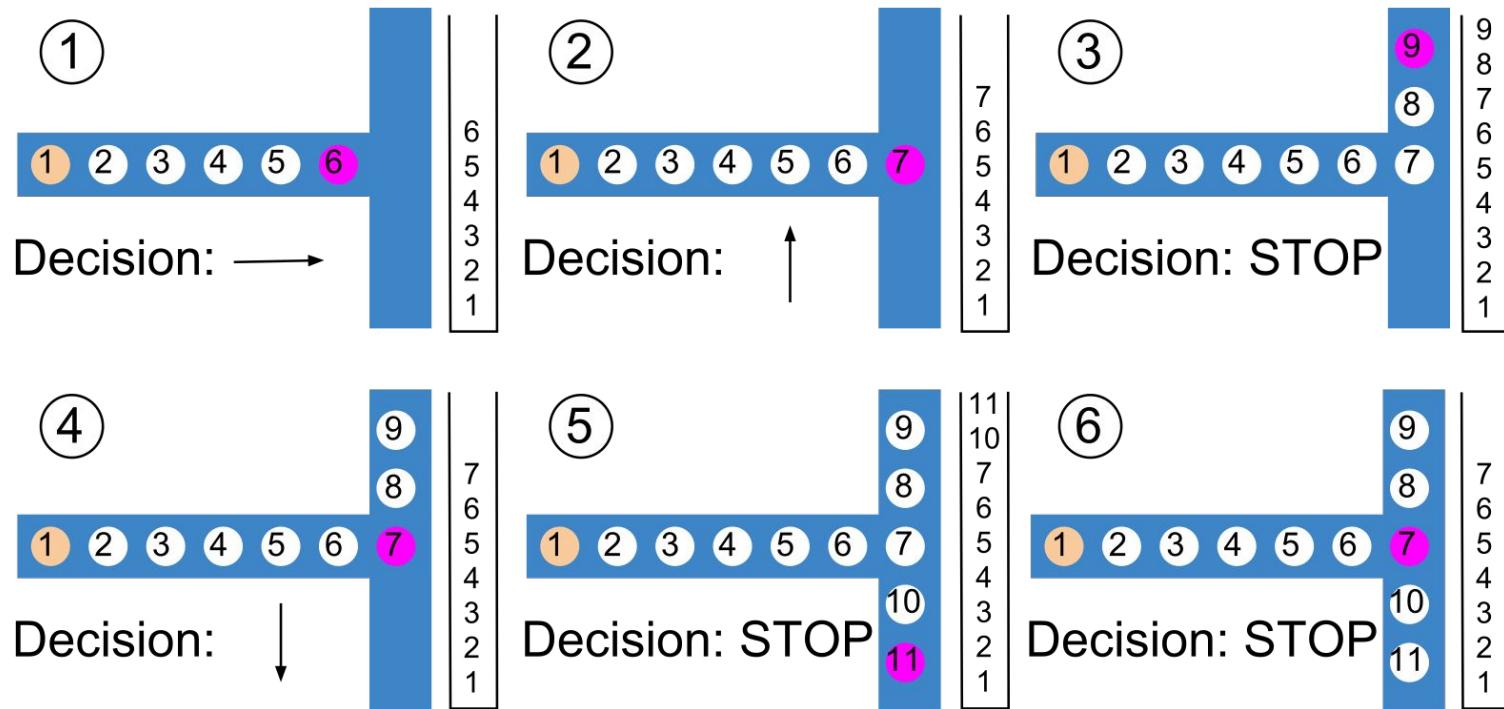
Negative example:



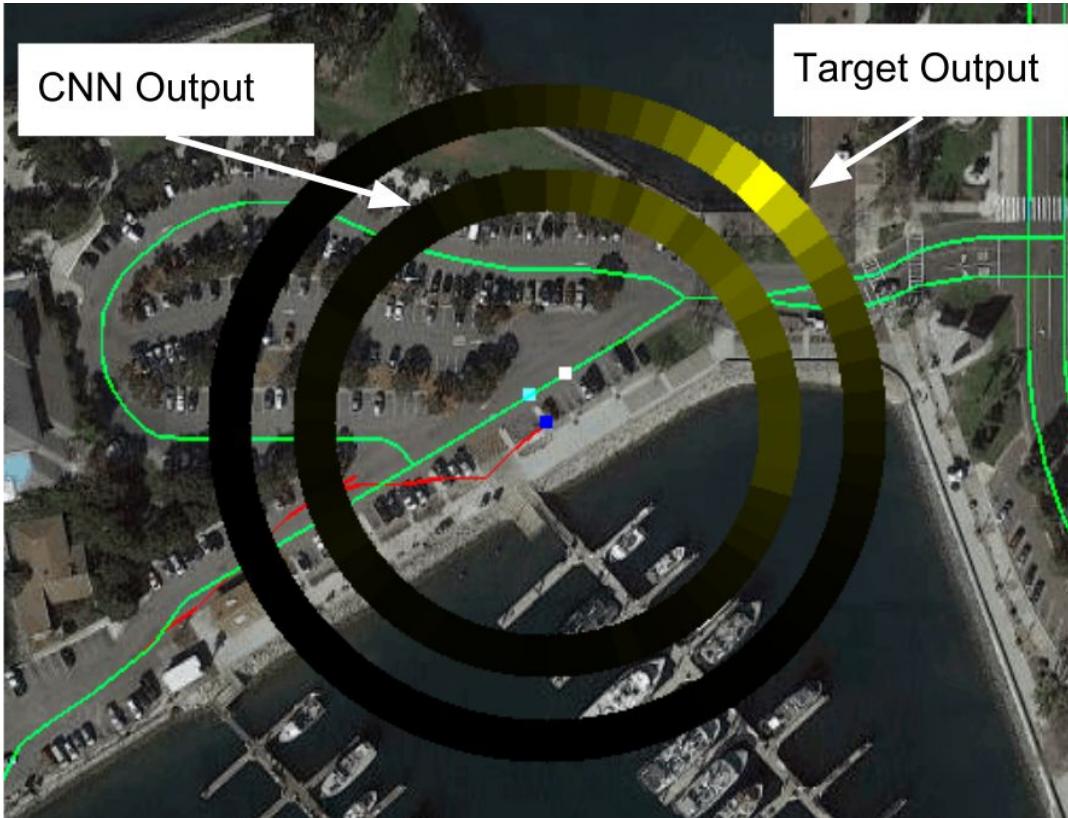
Positive example:



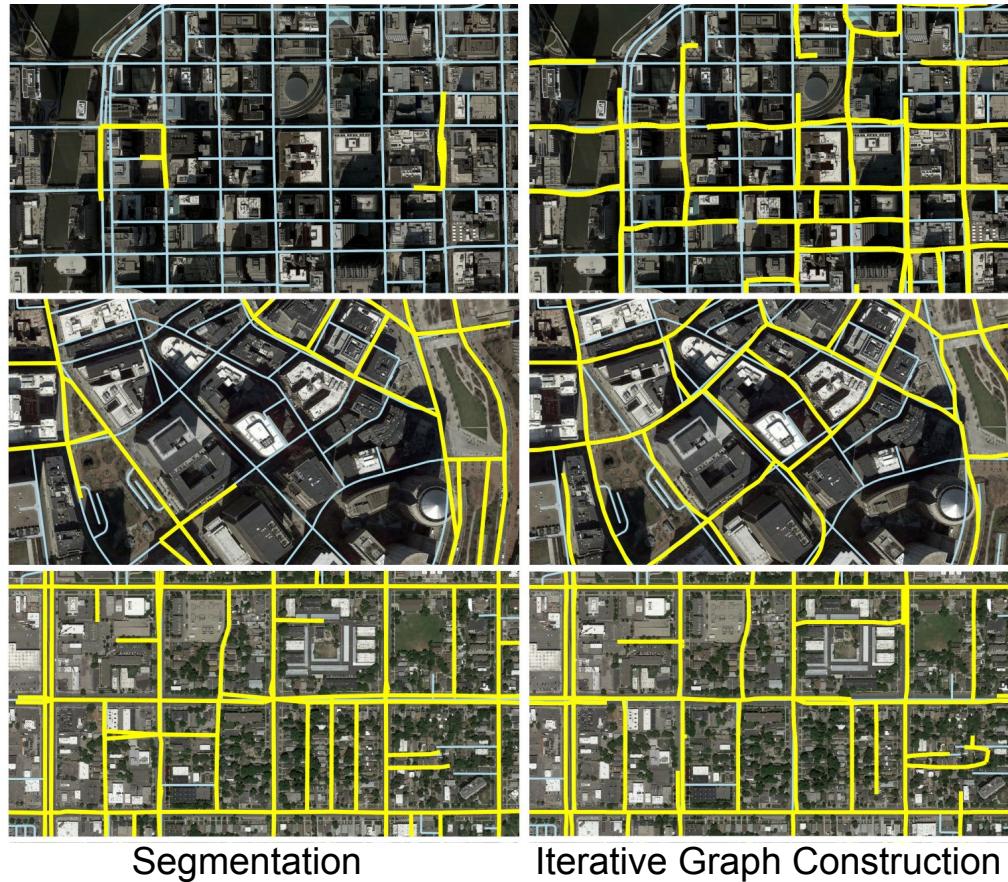
Iterative Graph Construction



Iterative Graph Construction



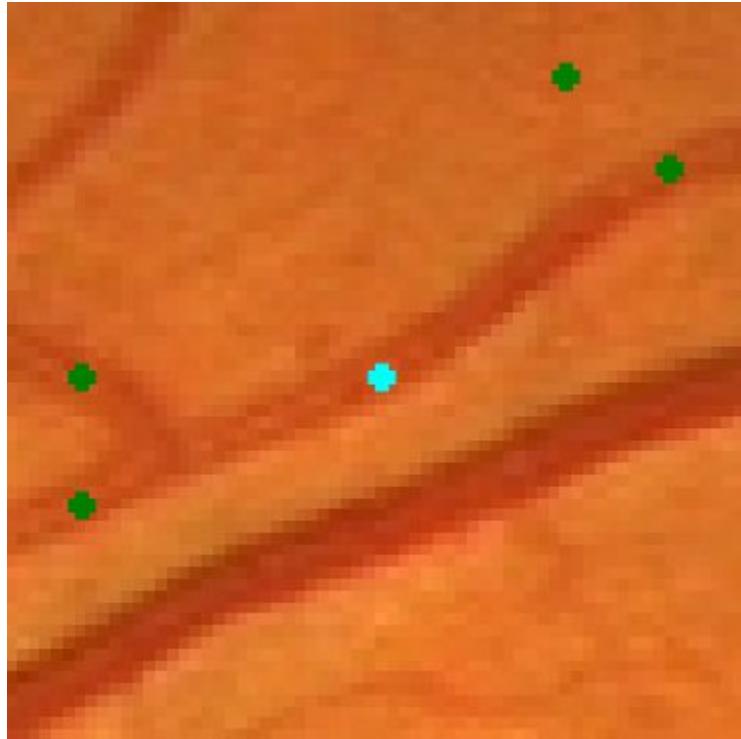
Iterative Graph Construction



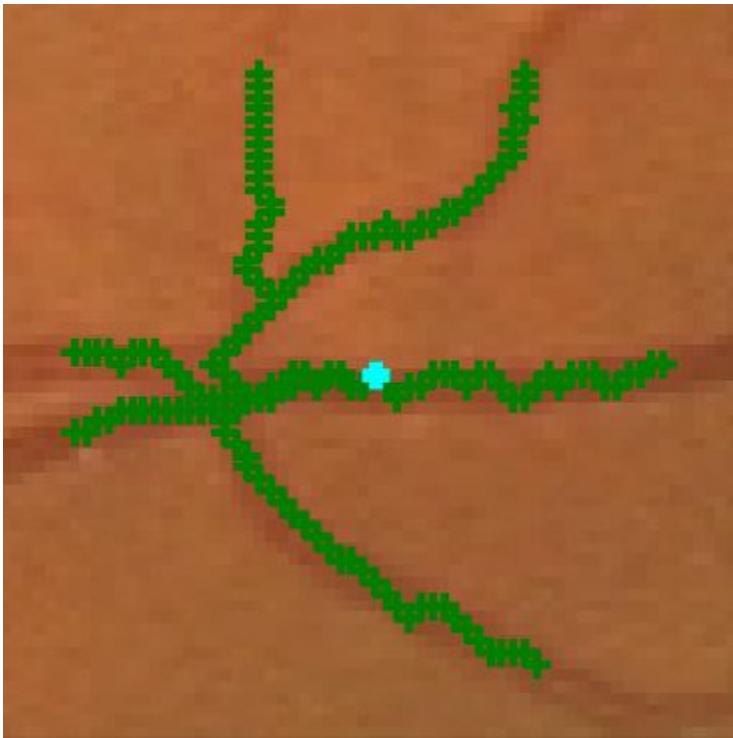
Iterative Graph Construction



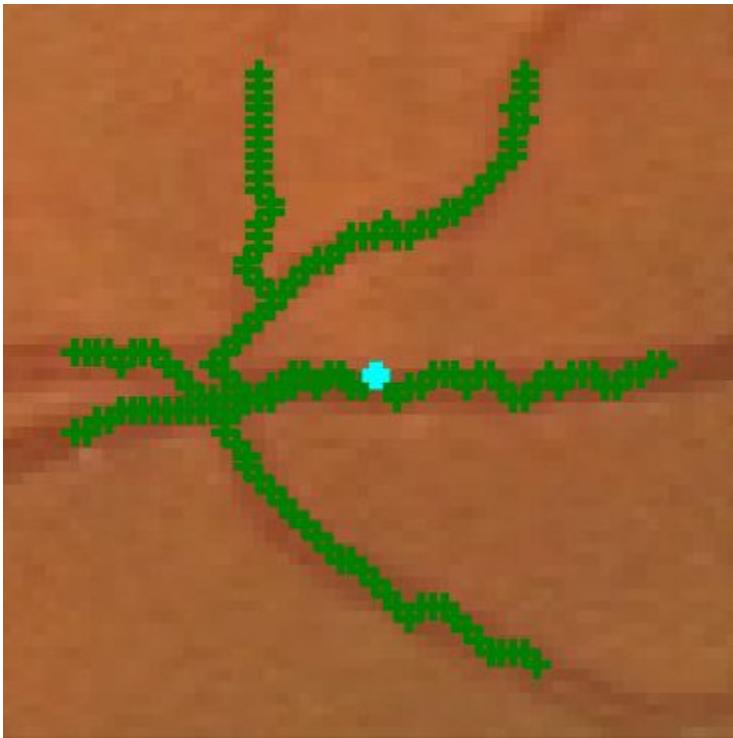
Iterative Graph Construction



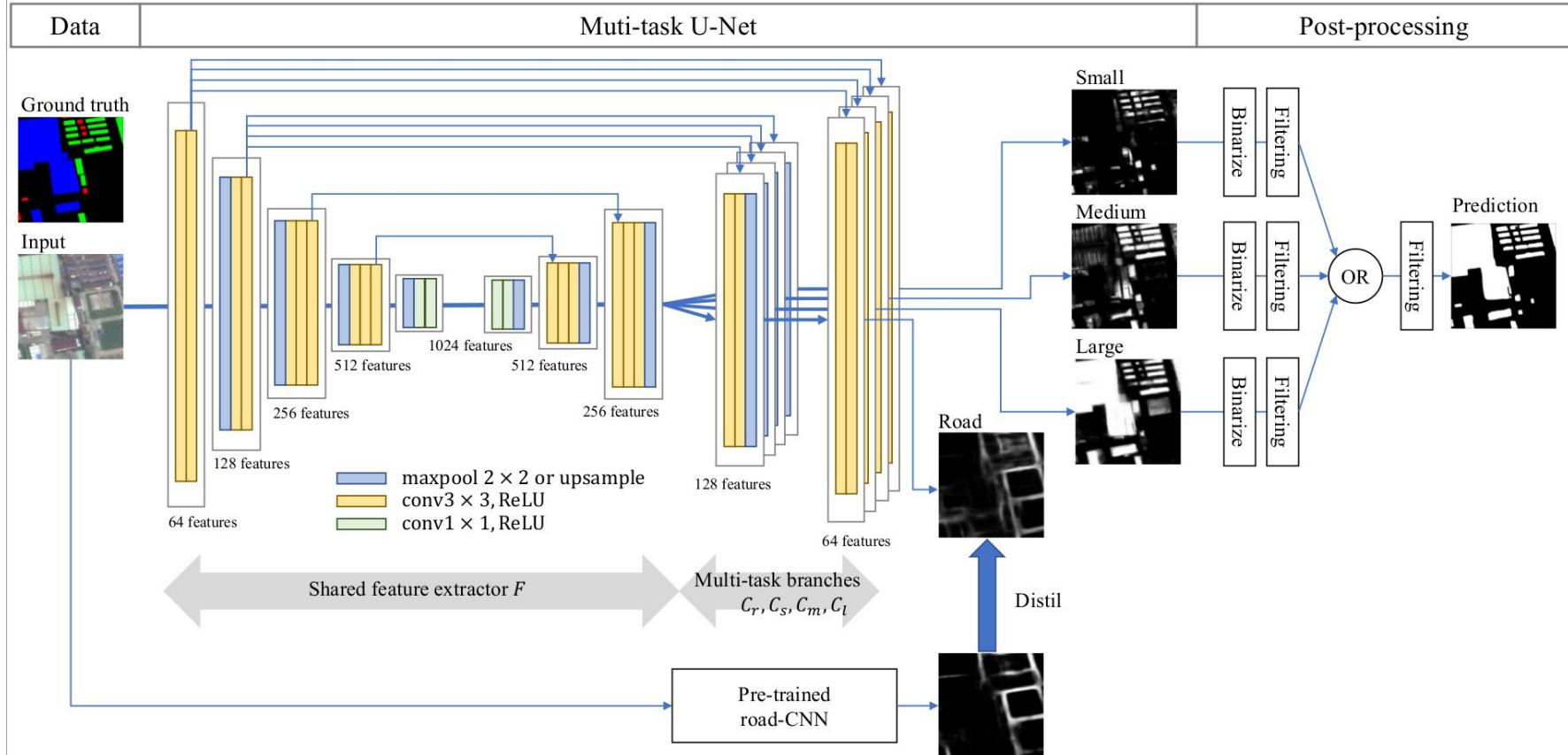
Iterative Graph Construction



Iterative Graph Construction

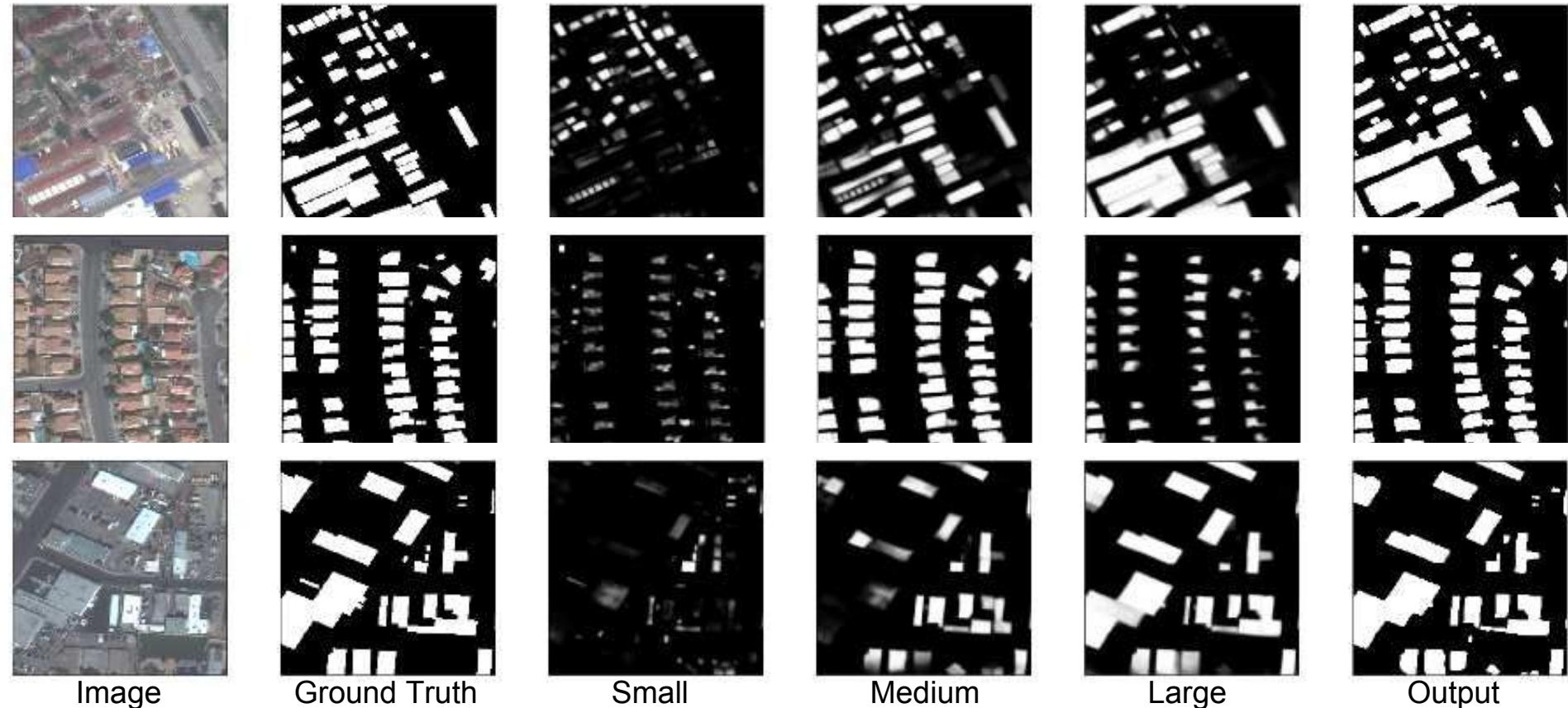


Building Extraction



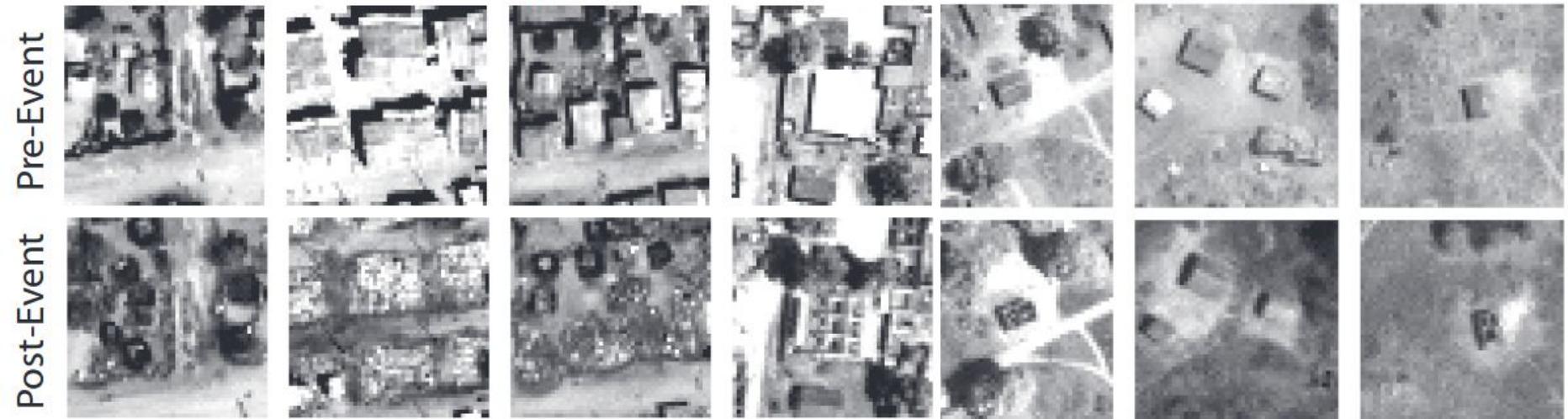
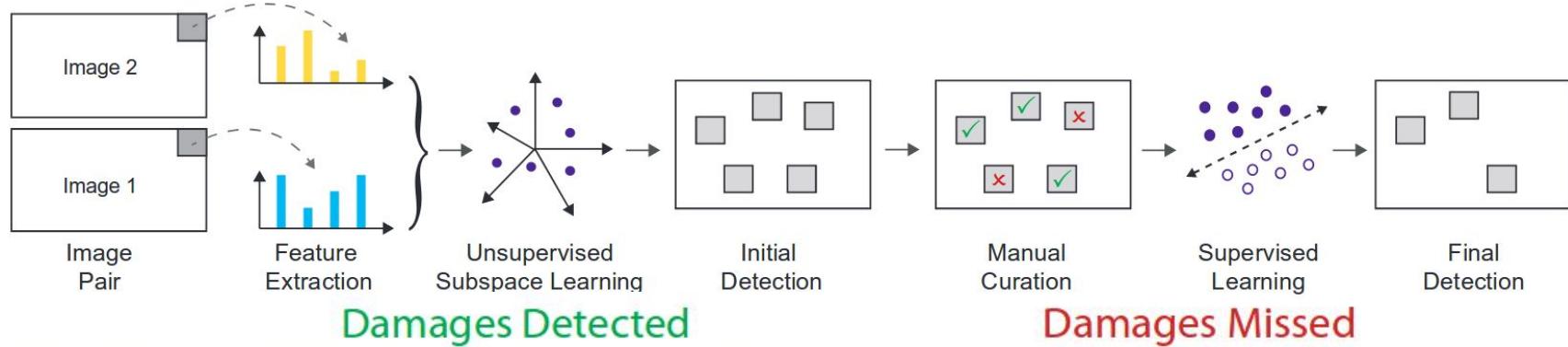
Ryuhei Hamaguchi and Shuhei Hikosaka. "Building Detection from Satellite Imagery using Ensemble of Size-specific Detectors" In CVPR Workshops (2018).

Building Extraction



Ryuhei Hamaguchi and Shuhei Hikosaka. "Building Detection from Satellite Imagery using Ensemble of Size-specific Detectors"
In CVPR Workshops (2018).

Damage Detection



Land Cover and Crop Type Classification

