

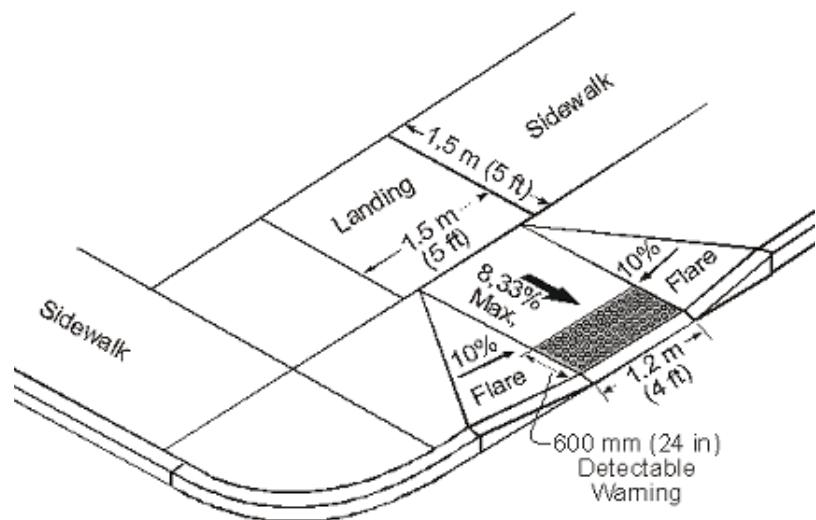
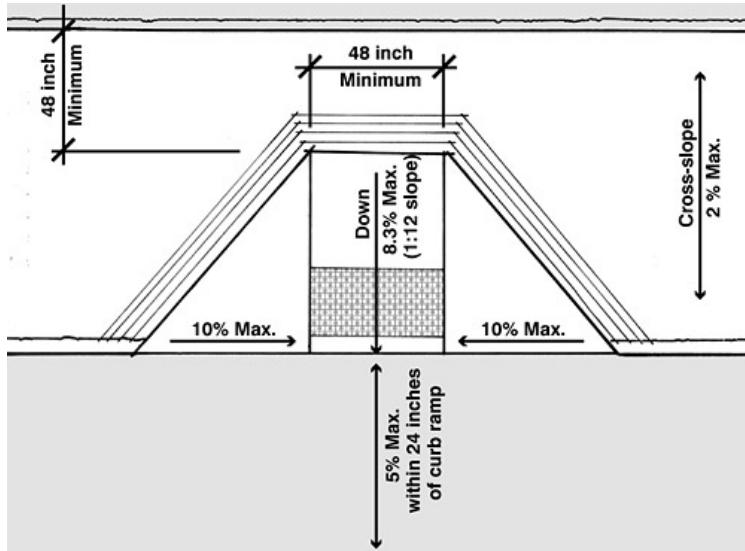


Deep Learning for Accessibility

Using Convolutional Neural Network to identify Curb Ramps

Natalia Bernardo

Americans with Disabilities Act (ADA) Compliant Curb Ramps



Motivation

Cities are making efforts to add ADA Compliant Curb Ramps.

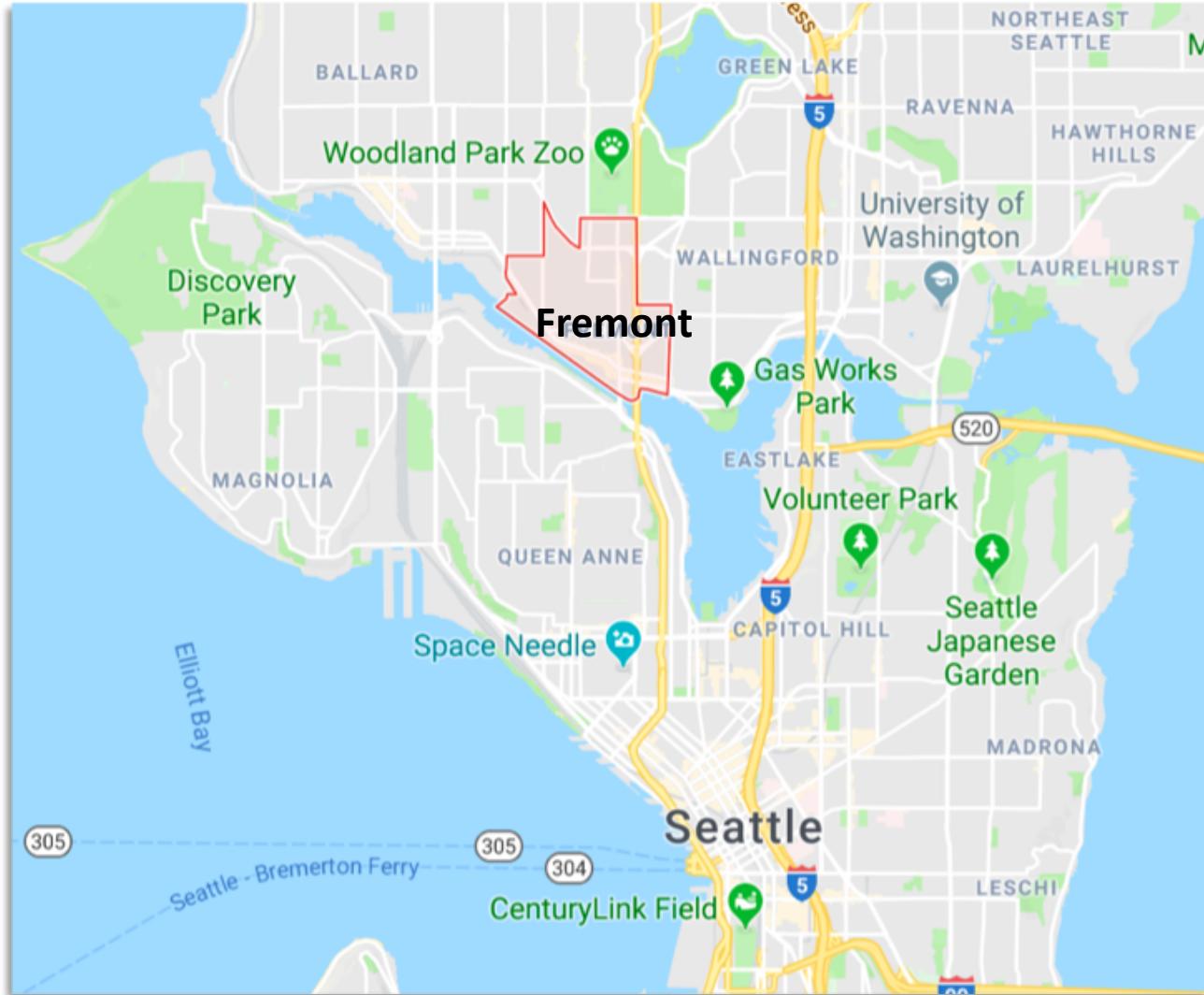


... but the assessment is costly, through “mapathons”

Goal: assess curb ramps' condition by using Tensorflow Object Detection on Google Street View images

Pilot Project

Map the curb ramps in Fremont, Seattle



Curb Ramps Detection Model

Data Collection



**City of Seattle
Curb Ramp Map**



Lat/Long of crossings



**Google Street
View API**



**Pictures of corners from
Google Street View**



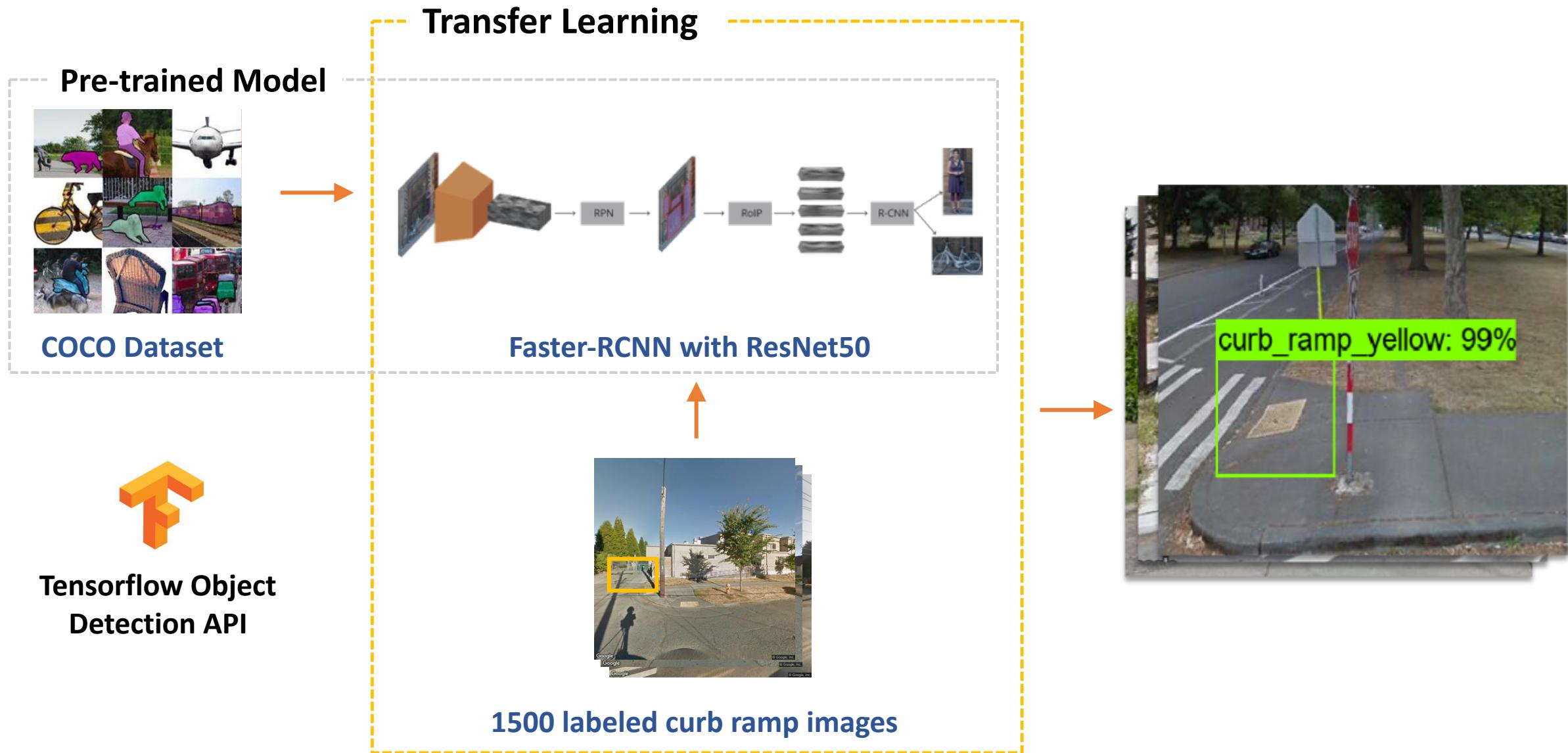
**Microsoft
VoTT**



**Bounding Boxes around
curb ramps**

Curb Ramps Detection Model

Model Development



Curb Ramps Detection Model

Results

✓ Correct Predictions

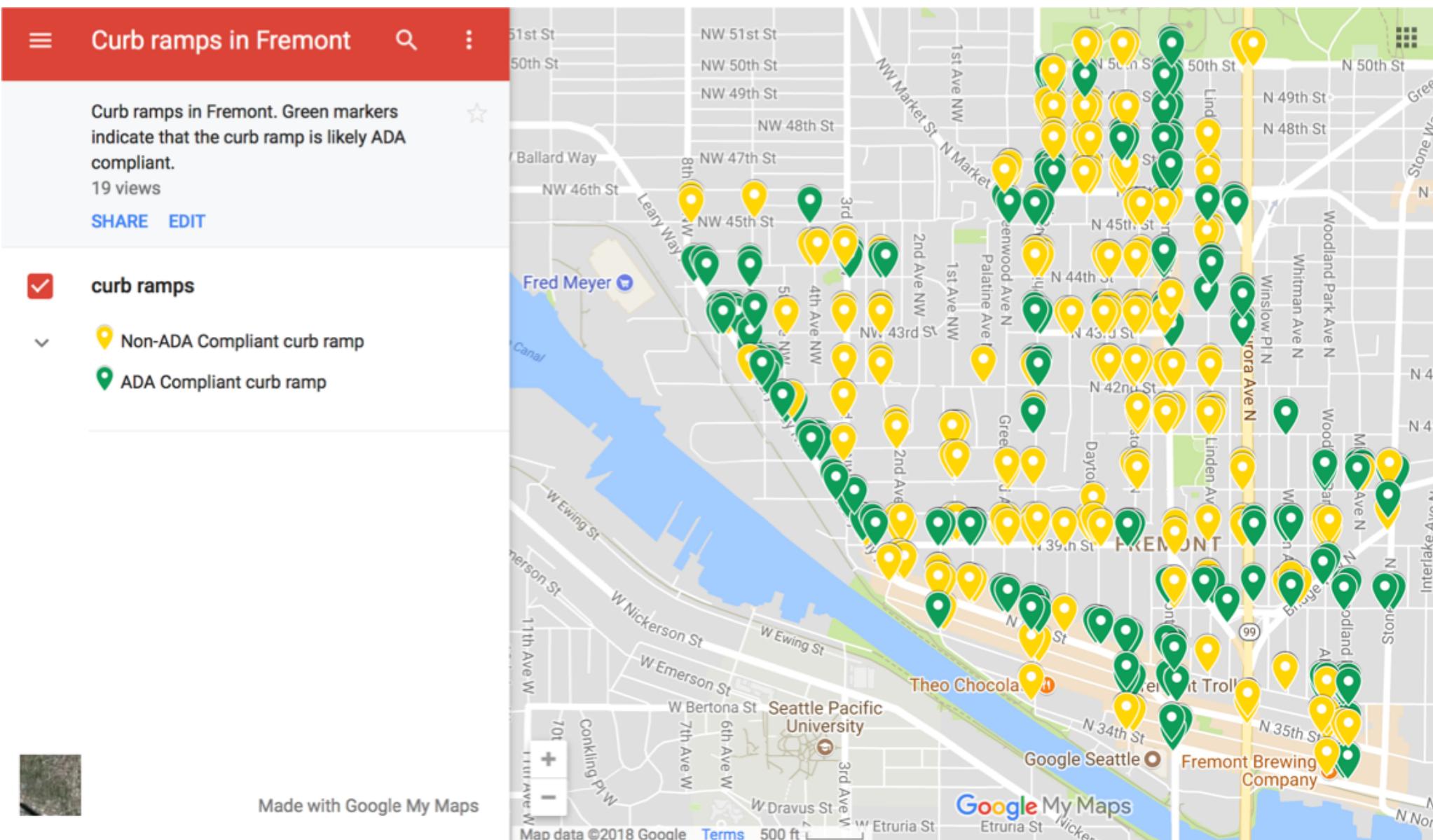


75%
Recall

✗ Wrong Predictions



80%
Precision



Check it out! goo.gl/3HWDNF



Conclusions

- ADA compliant ramps can be confirmed using Deep Learning.
- Mapping the confirmed location of ramps can be automated.

Next steps

- Expand beyond Fremont.
- Improve the algorithm for extracting images from Google Street View.
- Extract lat/longs of crossings using Google Maps.
- Share with City of Seattle.

Thank you!



Natalia Bernardo
bernardo.natalia@outlook.com