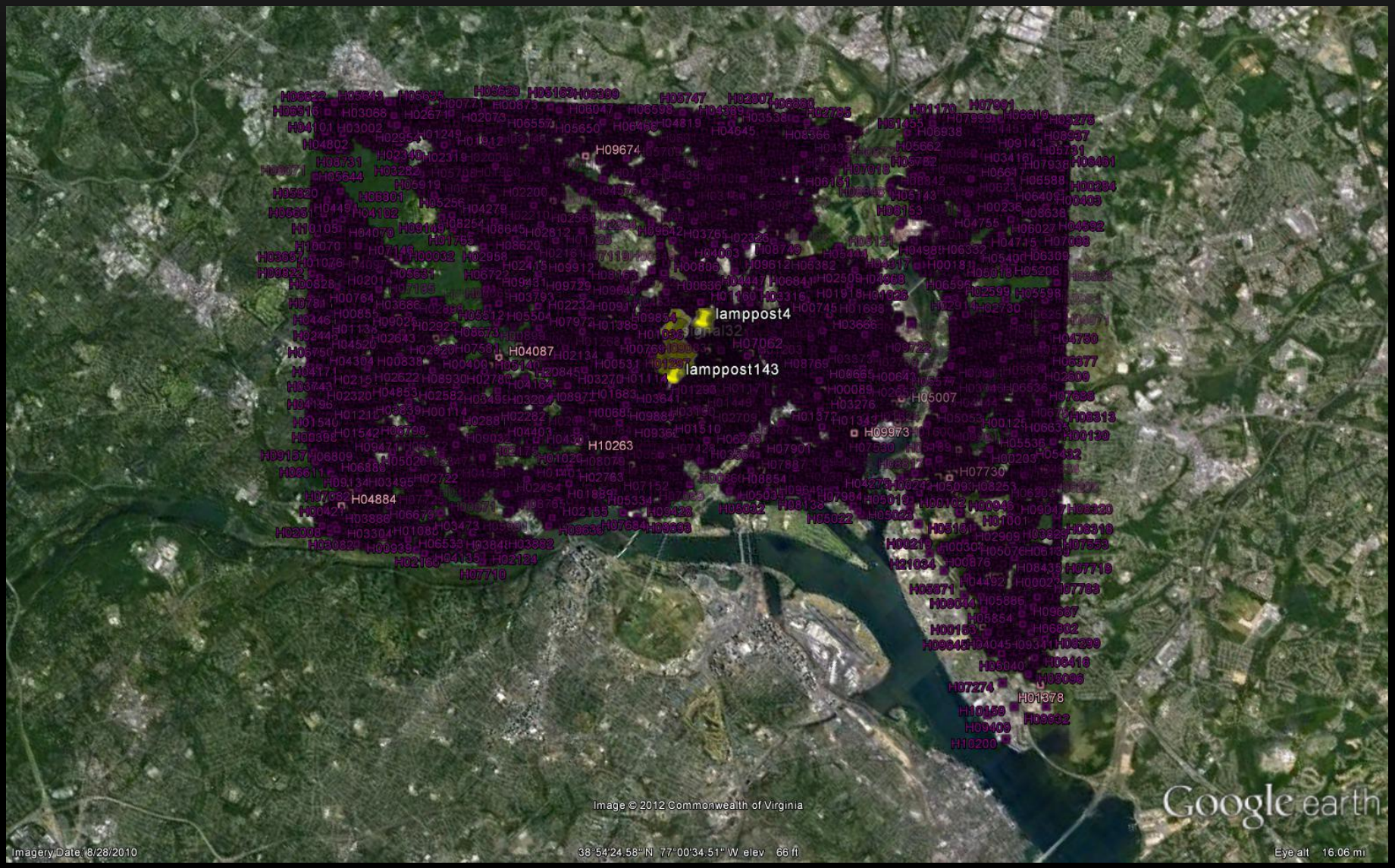
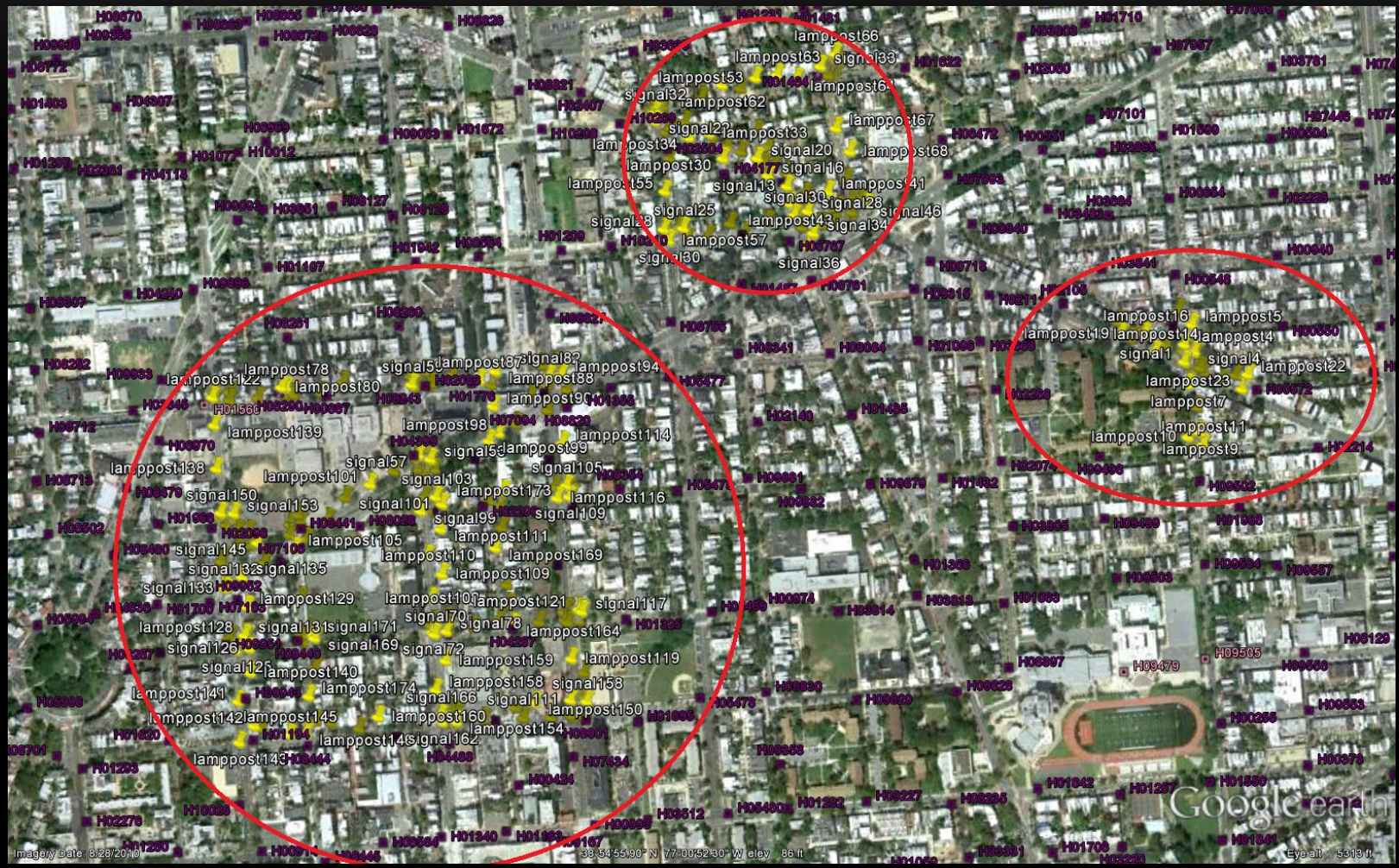
WEEK 10

Amir Zamir and Stephanie Morris

ENTIRE DATABASE



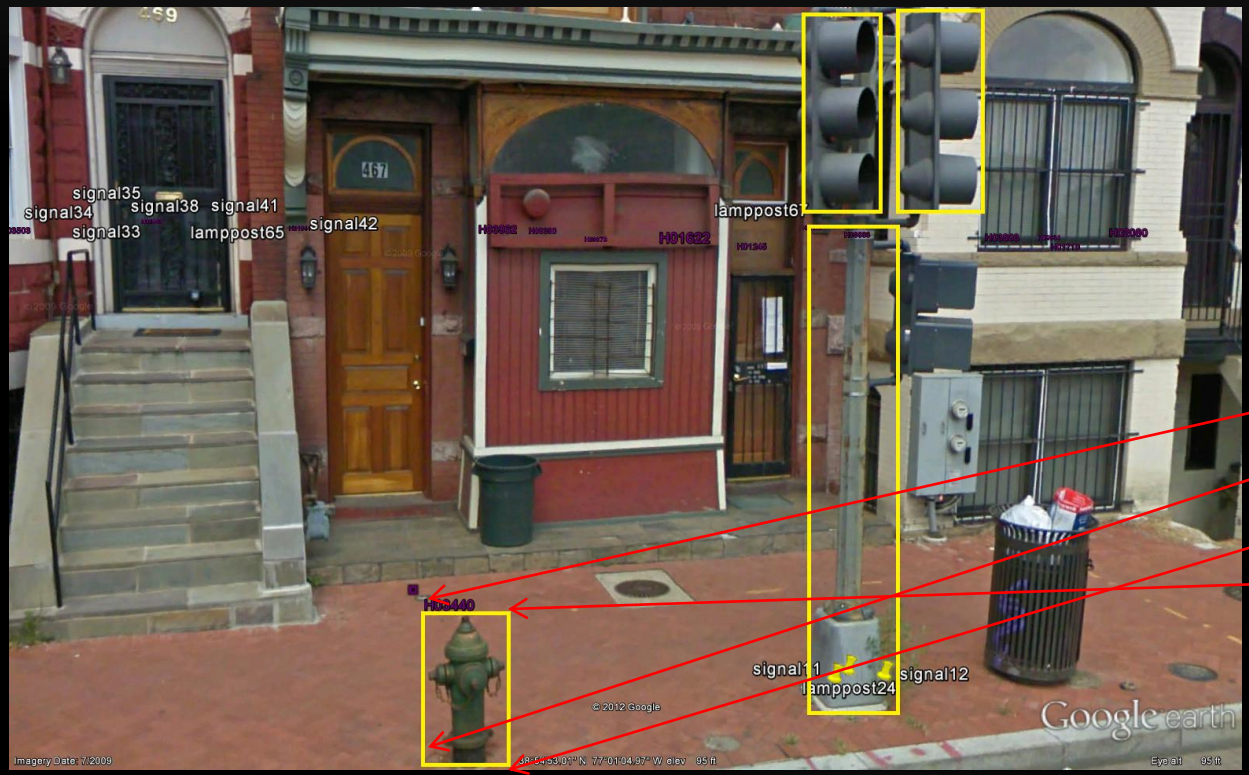
DATABASES I HAVE MADE



EXAMPLE QUERY IMAGE



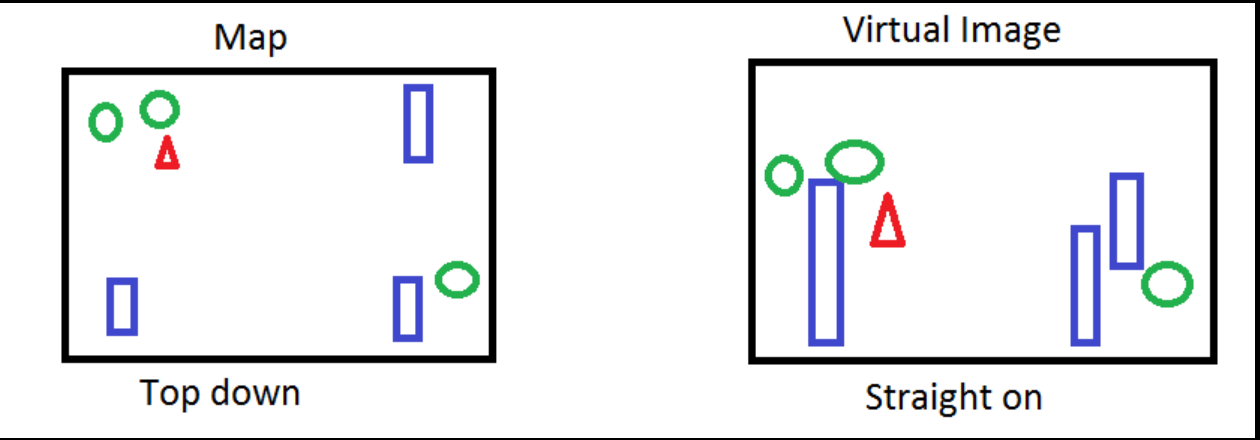
ANNOTATED QUERY IMAGE AND XML



- <object>
  <name>Hydrant</name>
  <pose>default</pose>
  <truncated>0</truncated>
  <difficult>0</difficult>
- <bndbox>
  <xmin>523</xmin>
  <ymin>5</ymin>
  <xmax>636</xmax>
  <ymax>190</ymax>
  </bndbox>
  </object>

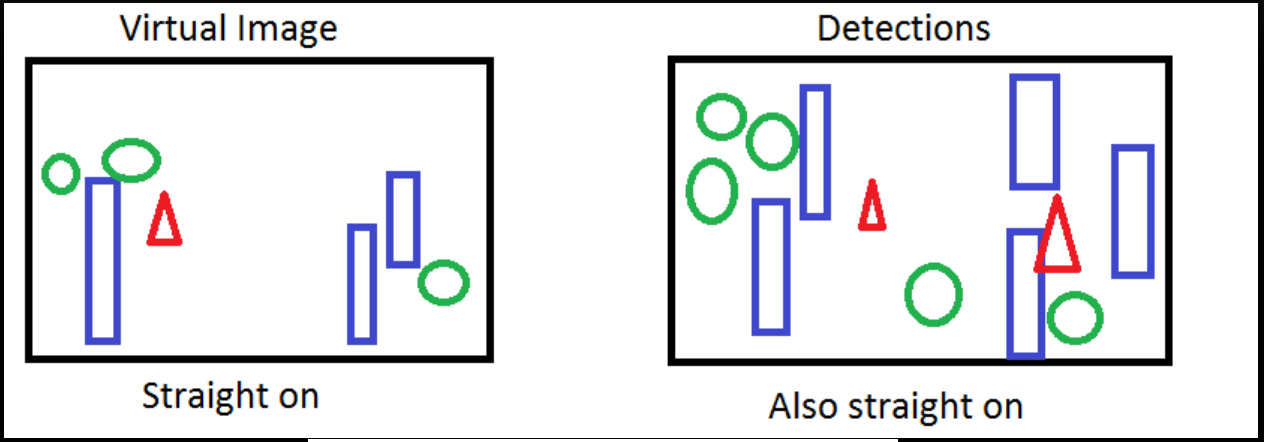
TWO STEP GEOMETRIC METHOD

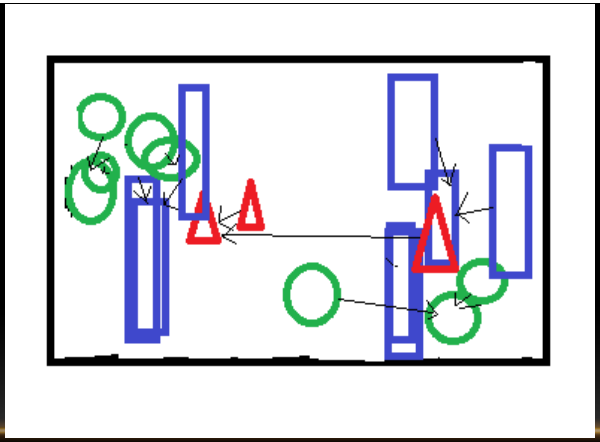
- Step One:
- From GIS data, be able to form virtual image



TWO STEP GEOMETRIC METHOD

- Step Two:
- Use virtual image to see how close detections are to being correct





FORMULA

- We have three objects present in the query image in certain amounts, and three objects that are detected in the image in certain amounts. To find the total number of different ways the detected objects could be arranged to fit the numeric constraint of the query image, we take the number of detections of each factorial all multiplied together, divided by the number of each of the objects factorial multiplied together.

- $$\frac{(\#\text{ detected hydrants})! * (\#\text{ detected signals})! * (\#\text{ detected telephone poles})!}{(\#\text{ hydrants in image})! * (\#\text{ signals in image})! * (\#\text{ telephone poles in image})!}$$

GOALS

- Finish coding second step of geometric method
- (Code currently takes in a query image and annotations that say where the objects are, detects objects, gets location of all detections, finds number of detections, ignores non-maximal suppression (to look at all detections), finds number of objects in image as said by annotation file, and finds total number of combinations (as explained on previous slide)
- (Still needs to compare all objects and locations for each combination, give a confidence value to each attempt, pick the attempt that is most correct, and display bounding boxes accordingly)
- Decide how to deal with fewer detections than objects present (currently using a higher threshold than we've been using to get more detections so there is less likelihood of too few detections)
- Figure out how to form GIS virtual image