WEEK 8

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NAÏVE METHOD CODE

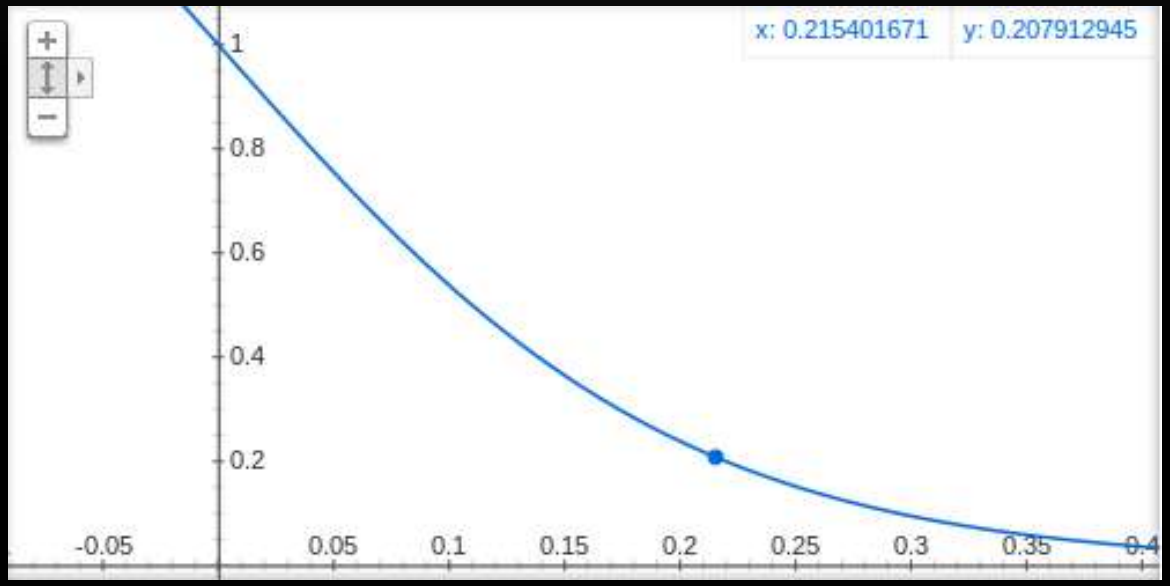
- First approach to our problem
- Query image with associated GPS tag
- GPS tags for all hydrants in DC
- Compare all of the distances to find closest hydrant to query image
- Give confidence value based on distance using Sigmoid function
- Process image using Hydrant model we created
- Get confidence value from object detector
- Multiply two confidence values together to receive a total confidence
- Decide whether or not the detection is a true positive based on how large this total confidence value is

PERFORMANCE OF FUSION

- Tested on three types of images, hydrants in DC, non-hydrants in DC, and hydrants not in DC
  - Pictures are taken too close to hydrant so false positives remain
  - The object detector doesn't see anything in the non-hydrant pictures, so no detection is given
  - The most interesting results come from when the query image is a picture of a hydrant in a place that isn't DC
    - GIS gets rid of detections of hydrants if it knows one isn't supposed to be nearby (according to a dataset of hydrant locations limited to one city)
    - The reason I did this type of performance check is that it is an exaggeration of the previous check. The minimum distance is greater and the probability of a "false positive" is much higher (since it is a positive)

GRAPH OF SIGMOID

Probability



Distance in kilometers

NAÏVE FUSION POINTS

- Area outside of database fusion will not work
- Should get rid of false positives that are not near a hydrant
- Not going to help with false positives close to hydrant
- Next step: Train object detector for traffic signals
- Look for another reoccurring object near hydrants
- Train object detector for that as well
- Begin coding geometry method

AREA OUTSIDE OF FUSION DATABASE



With fusion



Without fusion

FALSE POSITIVE NOT NEAR A HYDRANT



With fusion



Without fusion

DOESN'T HELP WITH FALSE POSITIVES NEAR HYDRANT



With fusion



Without fusion