WEEK 8

Amir Zamir and Stephanie Morris
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

Distance in kilometers

Probability
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