WEEK 6

Amir R. Zamir and Stephanie Morris

PROGRESS

- Got Linux desktop and installed all the necessary things to run Pedro's code
- Ran demos and read through code to familiarize myself
- Tried using code to train an example object detector with PASCAL dataset
  - 6 part deformable person model
  - Takes anywhere from a few hours to two days to train
  - Results on next slide
- Read Pedro's "Object Detection with Discriminatively Trained Part Based Models" paper
- Collected images of fire hydrants, bus stops, lamp posts, and traffic signals using web crawler
- Annotated databases of collected images
- Modified initialization file to train fire hydrant detector (not yet tried to compile)

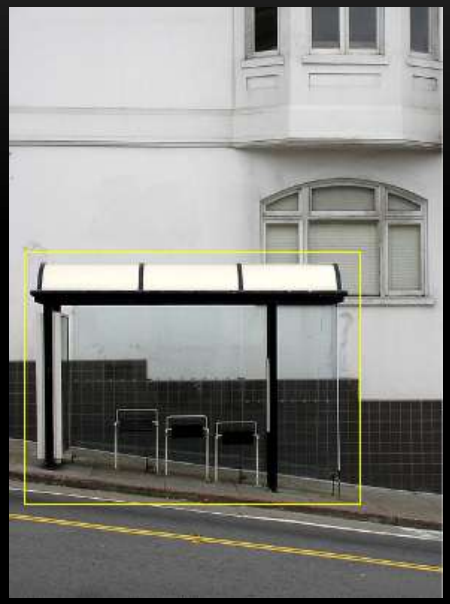
BUS STOP (76 IMAGES)








05305











FIRE HYDRANT (185 IMAGES)
















HY
RVICE



LAMP POST (45 IMAGES)
















©Alex Demyan (504)469-3581



TRAFFIC SIGNAL (157 IMAGES)










FreeFoto.com


FreeFoto.com


FreeFoto.com


FreeFoto.com

RESULTS OF CODE

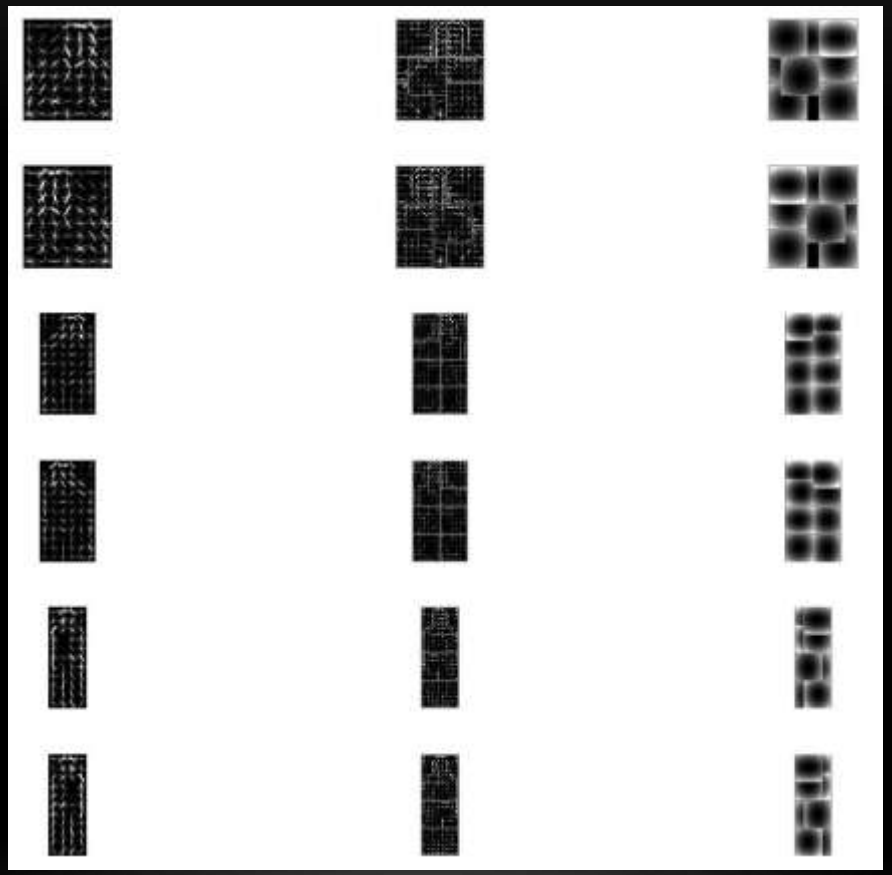
Query image:



When object detector is is applied:



MODEL VISUALIZED



GOOD DETECTIONS

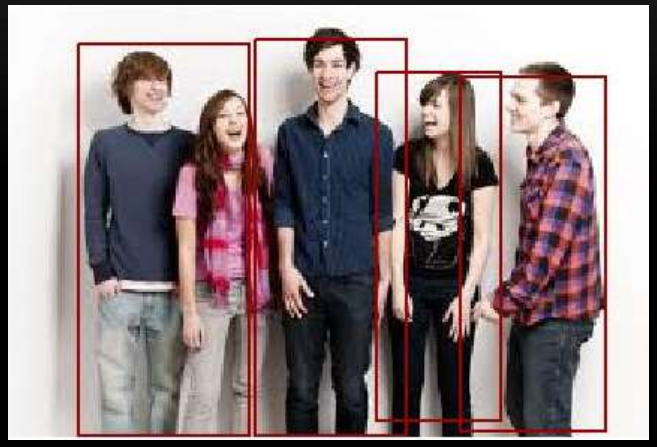


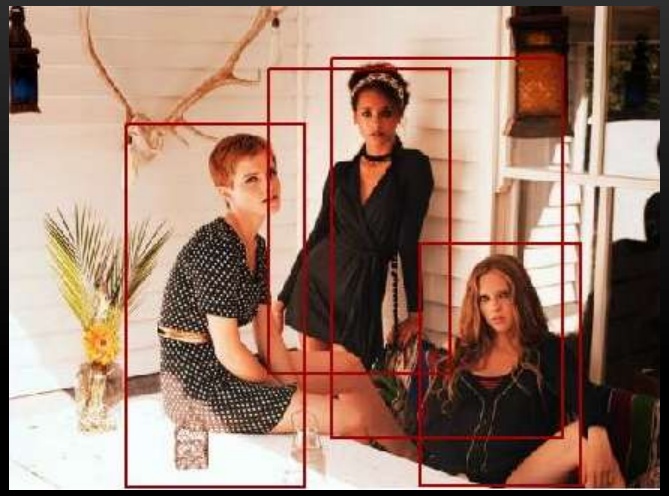






MINIMAL ERROR









MORE ERRONEOUS DETECTIONS

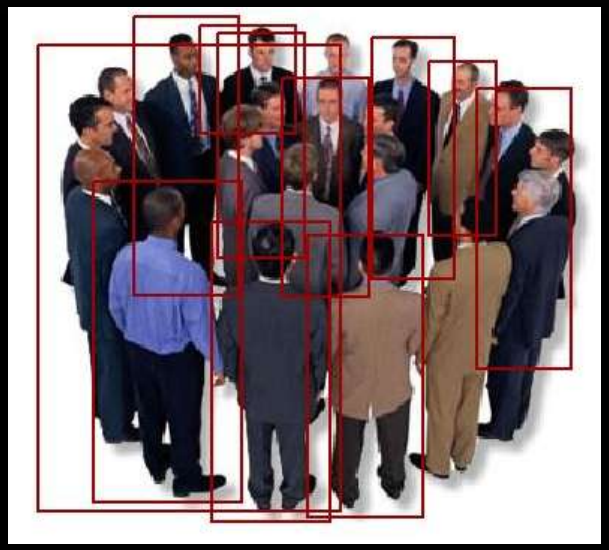




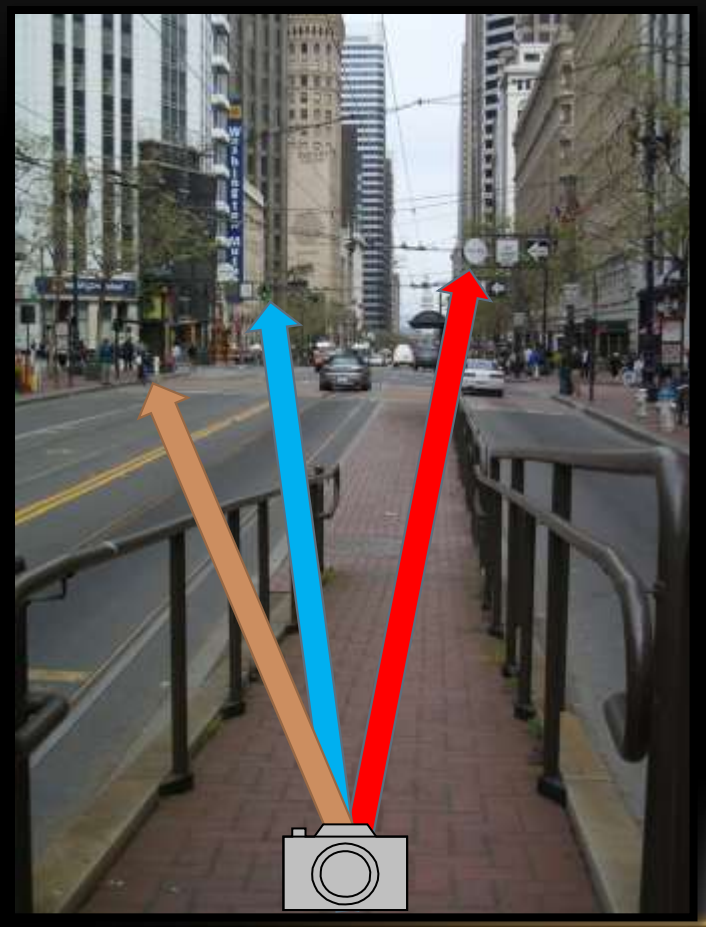




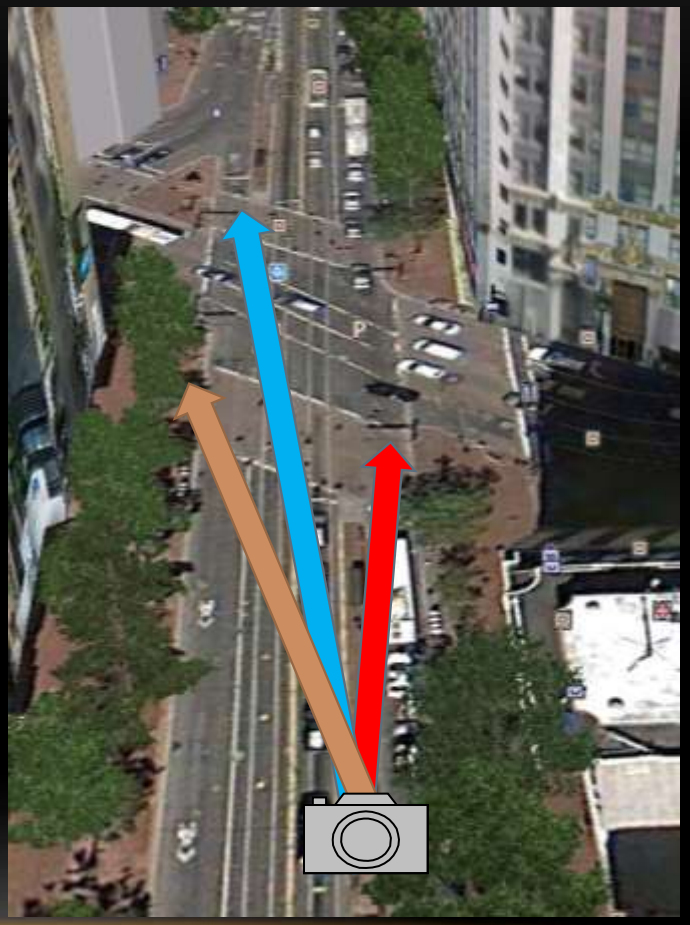
DIFFICULT EXAMPLE



FUSION BETWEEN OBJECT DETECTION AND GIS



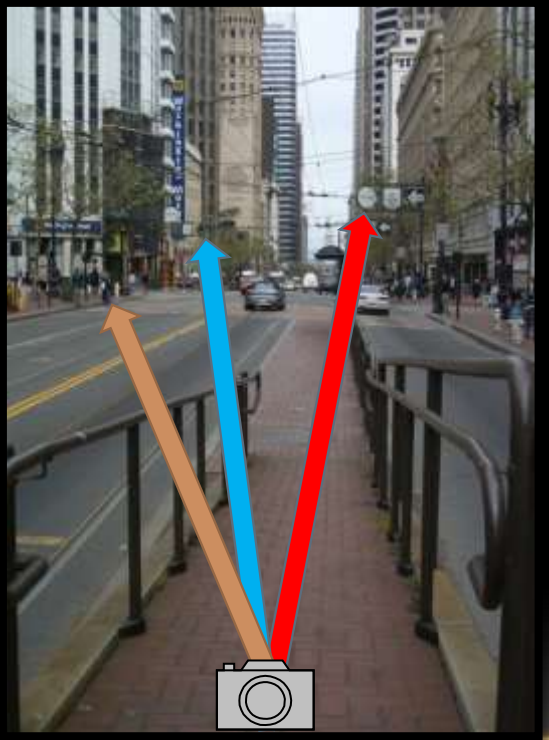
Query image



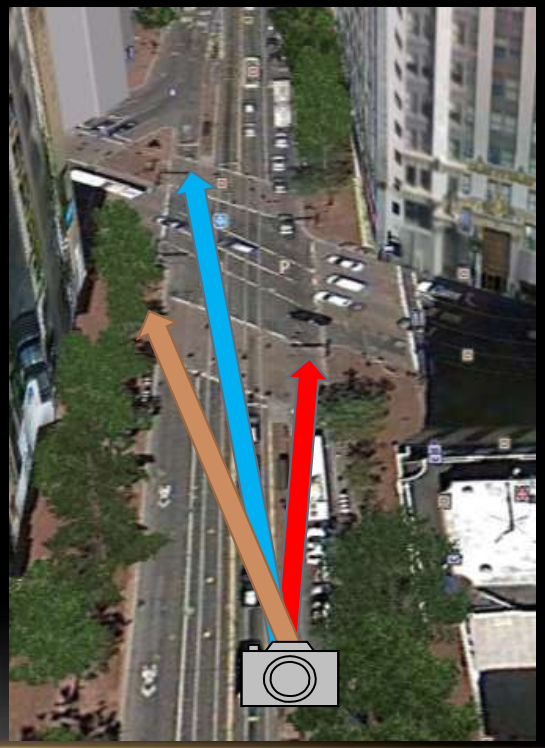
GIS info

FUSION BETWEEN OBJECT DETECTION AND GIS

- Hypothesis: The object which are further (in terms of GPS location) from the camera location are less likely to be visible in the image.



Query image



GIS info

FUSION BETWEEN OBJECT DETECTION AND GIS

- Hypothesis: The object which are further (in terms of GPS location) from the camera location are less likely to be visible in the image.

- Fusion Between Object Detection Results and GIS Database Information
  - Obtaining the confidence value for each object from object detection and forming a vector of probabilities of matching
  - Obtaining the GPS-distance between the camera GPS location and the objects of interest from the GIS databases, converting the distance to probability
  - Fusing the two resources of information using Bayes rule or marginal probabilities.

GOALS

- Create object detection models for the four objects
- Test them on various query images
  - Multiple instances of the object
  - One instance of the object
  - No instances of the object
- Fusion Between Object Detection Results and GIS Database Information