Object detection are widely used in Face Detection, Visual Search Engine, Intelligent Vehicles, tracking objects and many other areas. The main difference between object detection and image classification is the inference speed. Since the real application needs our algorithm to be a real-time method. Our capstone design is to implement a object detection application by using YOLO framework and apply some methods to improve the performance.

Motivations and Objectives

- Motivations
  1) YOLO’s good performance on object detection
  2) Apply compressing method to accelerate and reduce the memory cost of model.
- Objectives
  1) build the YOLO model with tensorflow and combine it with quasi compression method
  2) training the model to find a balance between accuracy and speed

Research Challenges

- Challenge 1 Implement Quasi method using TensorFlow.
- Challenge 2 Fully understand YOLO algorithm.
- Challenge 3 Adjusting the compressing ratio to make a tradeoff between the precision and inference speed.

Methodology

Methodology (put some figure)

- Step 1 Build up the YOLOv3 backbone using tensorflow.

Methodology contd...

- Step 2 Implement Quasi compressing method apply to convolution layer to YOLO backbone.

Results

Results (put some figure)

More results

Discussion: we tried my best to get the optimal balance between the precision and speed, due to the constrain of the hardware we do not have enough time training the model to get the best result.

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References

[1] YOLOv3: An Incremental Improvement
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