User Interface of Object detection

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ABSTRACT

This paper proposed a PyQt user interface with YOLO algorithm to detect objects, classify, and use Canny and Blob detection to circle the round object.

Keywords: YOLO algorithm, PyQt, Canny algorithm, Blob detection

1. INTRODUCTION

Convolution Neural Network(CNN) has been used in image detection and classification widely. YOLO algorithm, a branch of CNN, has an advantage of real time detection.

1.1 YOLO

YOLO algorithm is a real-time object detection algorithm, including classifier and localizer. By using different scales and location, it still maintain the high performance of CNN results.

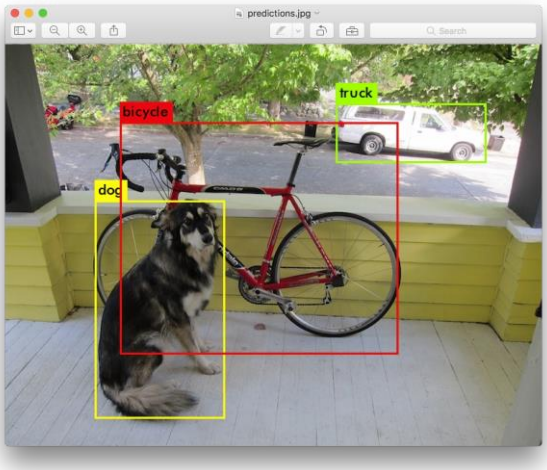


Figure 1 YOLO result
(form https://pjreddie.com/darknet/yolo/)

1.2 Canny algorithm

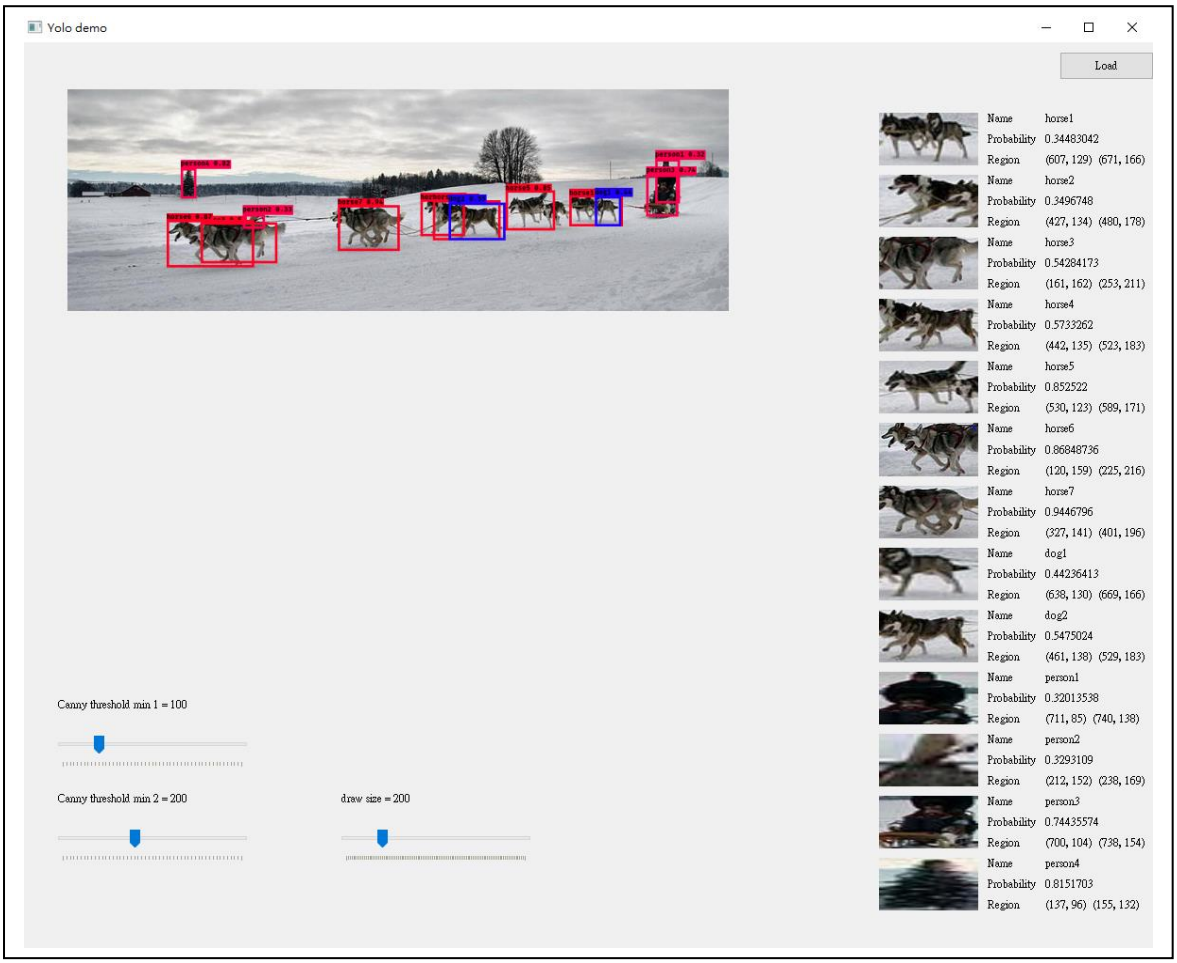
Canny algorithm is used to find the object edge and using double threshold to improve the performance. Points which gradient value is higher than two threshold will be detected. If the value is between two threshold, it will only be reserve if its location is connected the point which is higher than two threshold.

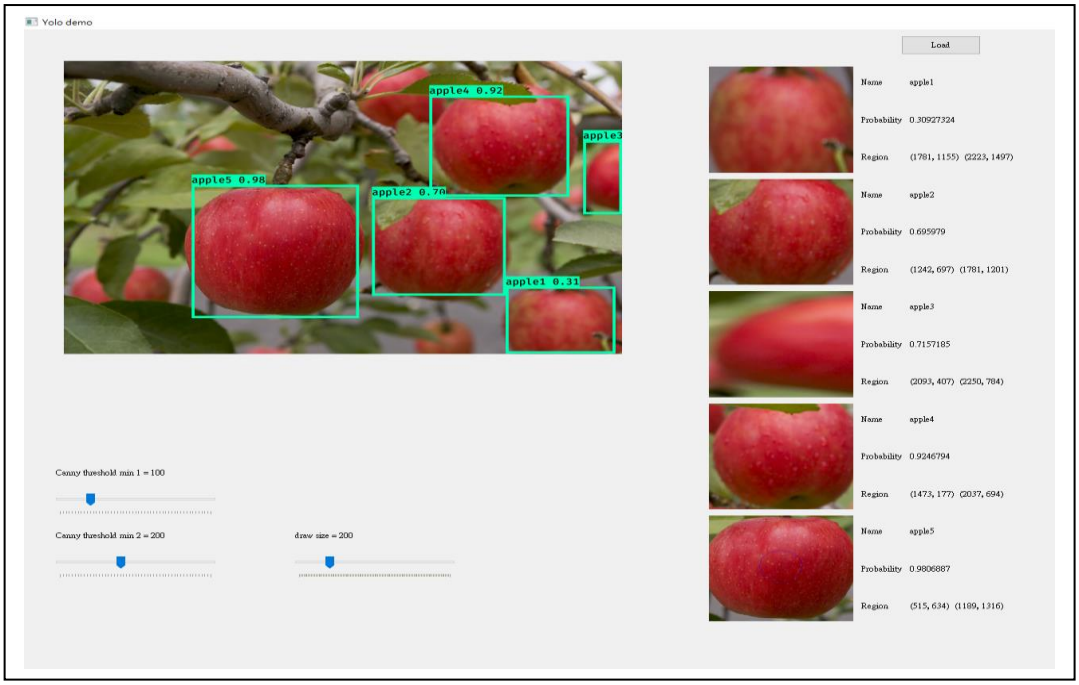
Figure 2 Canny algorith result
(from https://en.wikipedia.org/wiki/Canny_edge_detector)

2. RESULT

2.1 report

Design UI and display the result image by YOLO algorithm and get each object image, and use Canny algorithm and Blob detection to find circle. Using a complicated image to test the result.





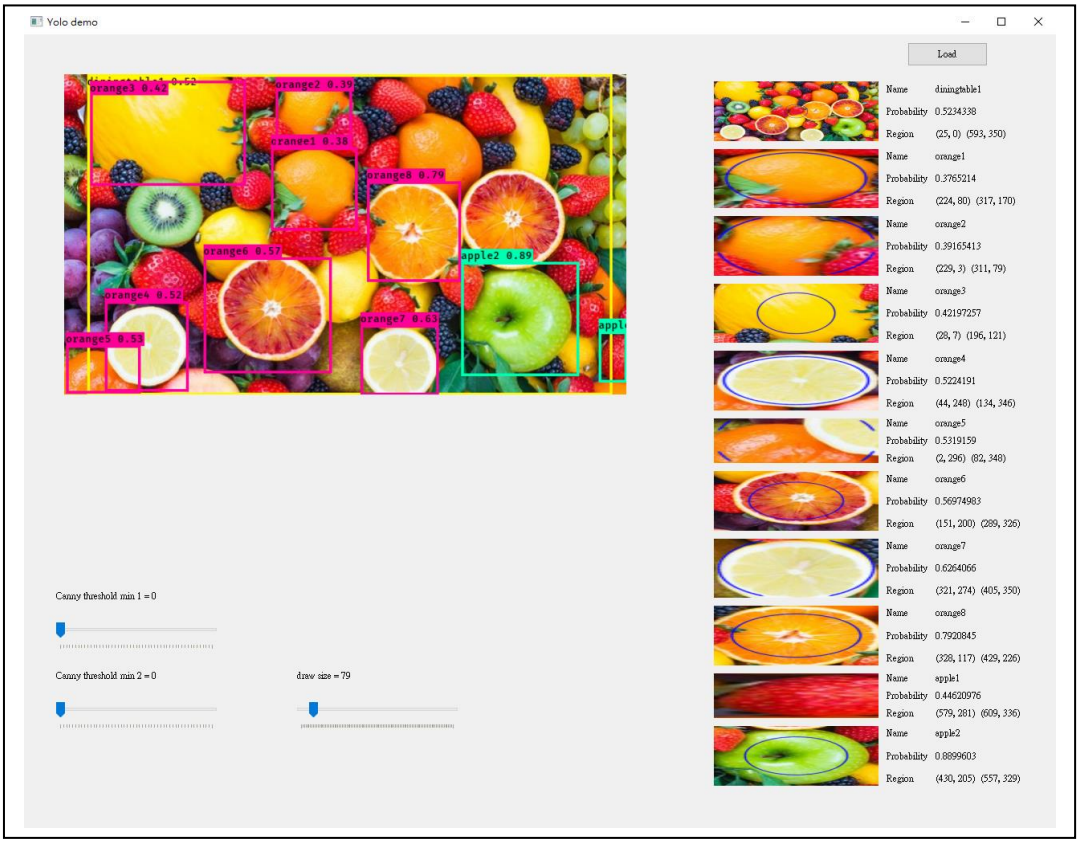


Figure 3. UI design

3. FUTURE WORK

If the image is complicated, YOLO still has wrong classification and location in complicated image. Because of poor performance of Canny and Blob algorithm and simplicity, we give up the Canny and Blob function in the end. This UI only can extract feature from image until now, and future work will aim to extract feature form video and display in real time.

4. OTHER

4.1 References

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