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# Project Presentation — Gesture 2048

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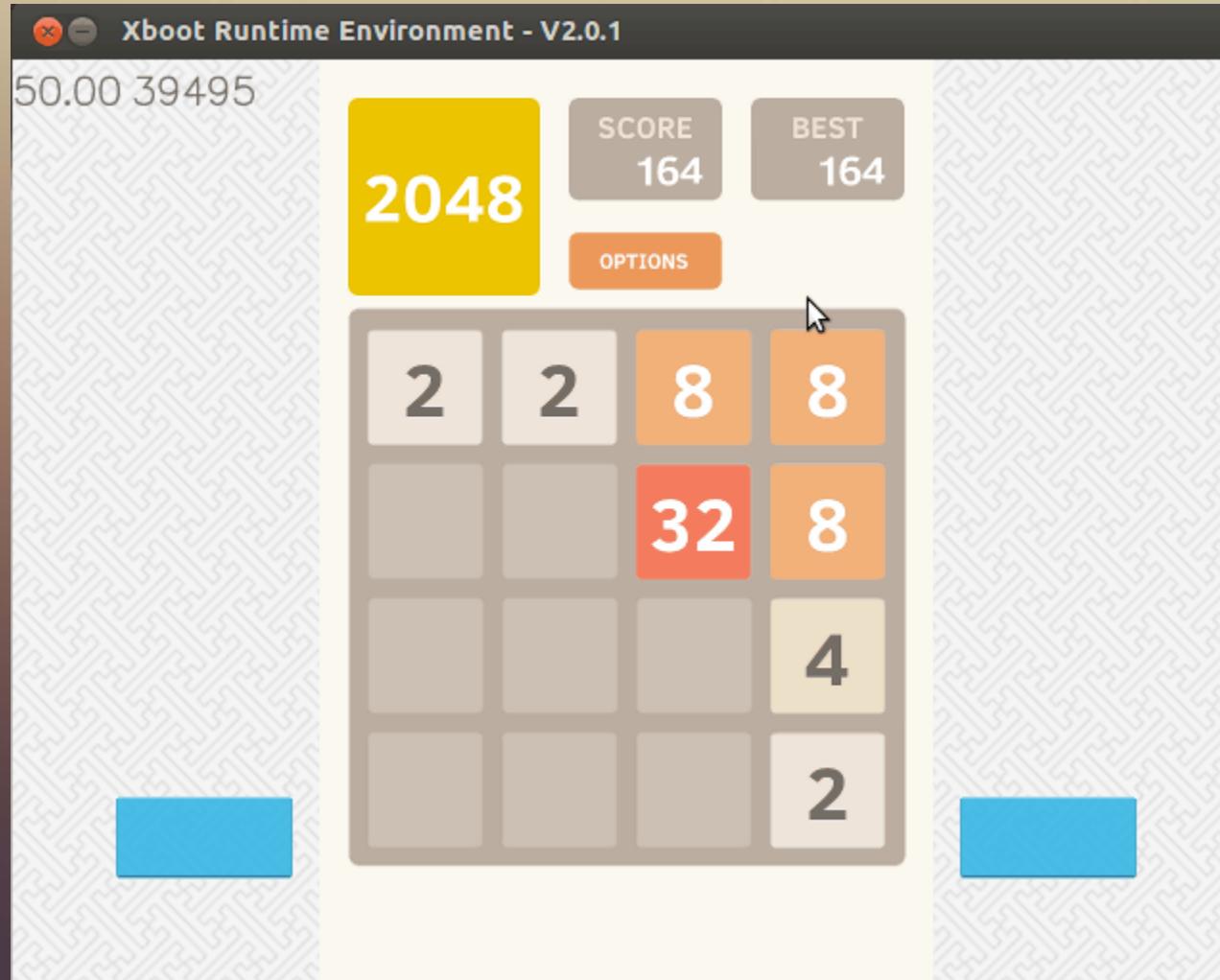
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# Abstract

PART  
ONE

# 2048 puzzle game

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# Hand Detection Using Neural Network

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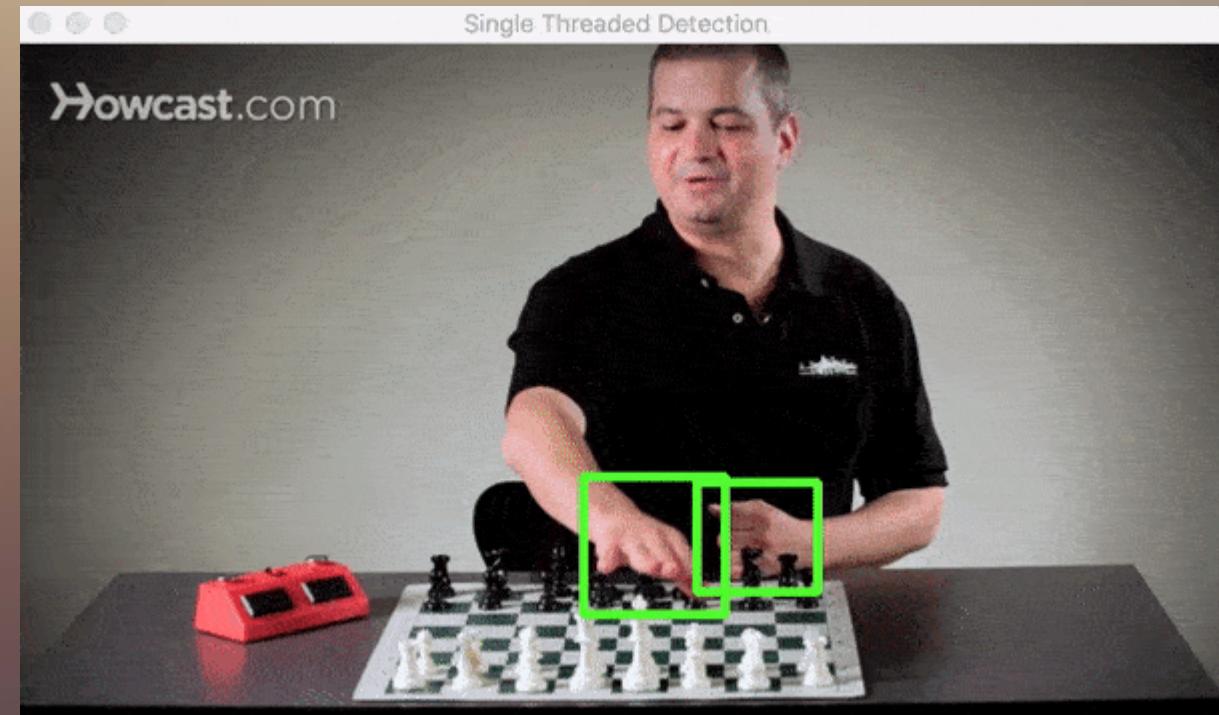
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Demo Video

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# Methods & Procedure

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Three



Get the coordinates of  
the detected hands



Detect the changes of  
the coordinates



Change the input  
method of 2048 game

# 1. Generate the coordinates of hands

```
53 def draw_box_on_image(num_hands_detect, score_thresh, scores, boxes, im_width, im_height, image_np):
54     for i in range(num_hands_detect):
55         if (scores[i] > score_thresh):
56             (left, right, top, bottom) = (boxes[i][1] * im_width, boxes[i][3] * im_width,
57                                         boxes[i][0] * im_height, boxes[i][2] * im_height)
58
59             p1 = (int(left), int(top))
60             p2 = (int(right), int(bottom))
61             cv2.rectangle(image_np, p1, p2, (77, 255, 9), 3, 1)
```

# Detect the

```
391     if a==9:
392         # print(location_list)
393         # print(num_left,num_right,num_top,num_bottom)
394         num_max=max(num_left,num_right,num_top,num_bottom)
395         too_many_max=0
396         if num_left==num_max:
397             too_many_max+=1
398         if num_right==num_max:
399             too_many_max+=1
400         if num_top==num_max:
401             too_many_max+=1
402         if num_bottom==num_max:
403             too_many_max+=1
404
405         if too_many_max<=1:
406             if num_left == num_max:
407                 hand_direction = 'left'
408             elif num_right == num_max:
409                 hand_direction = 'right'
410             elif num_top == num_max:
411                 hand_direction = 'down'
412             elif num_bottom == num_max:
413                 hand_direction = 'up'
414
415         location_list[a-1][0]=hand_direction
416         location_list[a-1][1]=num_left
417         location_list[a-1][2]=num_right
418         location_list[a-1][3]=num_top
419         location_list[a-1][4]=num_bottom
420
421         if num_left>0 and num_right>0 and num_top>0 and num_bottom>0:
422             print("OK")
423
424         else:
425             print("Error")
```

# Change the input method of 2048 game

```
185     @staticmethod
186     def keyDownPressed(keyvalue, matrix):
187         if keyvalue == K_LEFT:
188             return LeftAction(matrix)
189         elif keyvalue == K_RIGHT:
190             return RightAction(matrix)
191         elif keyvalue == K_UP:
192             return UpAction(matrix)
193         elif keyvalue == K_DOWN:
194             return DownAction(matrix)
195
196 #修改部分
197     @staticmethod
198     def hand_track_input(keyvalue, matrix):
199         if keyvalue == 'left':
200             return LeftAction(matrix)
201         elif keyvalue == 'right':
202             return RightAction(matrix)
203         elif keyvalue == 'up':
204             return UpAction(matrix)
205         elif keyvalue == 'down':
206             return DownAction(matrix)
```

# References

PART  
FOUR

<https://github.com/victordibia/handtracking#citing-this-tutorial>

<https://www.cnblogs.com/darksouls/p/8227821.html>

THANKS FOR WATCHING