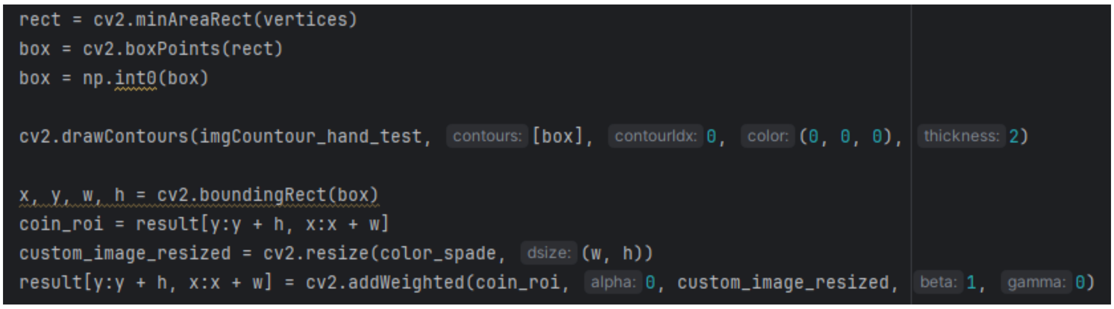
Trick2: Project a card

Platform: PyCharm   Environment: Python 3.1

I made modifications to the program from the first question. First, the system detects the position of the paper. If it's not clear, the color detection module can assist. Then, the paper's design is changed using predefined gestures.

Problem: I encountered was that the system did perform the desired behavior, but the projection of the playing cards was particularly rough. So, I am trying to find ways to optimize it.

Solution:



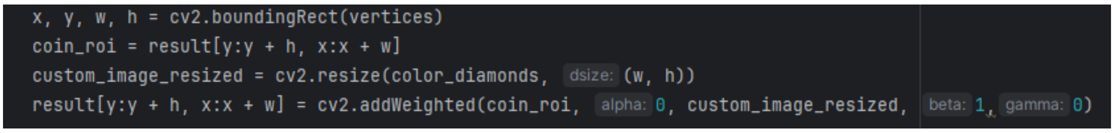
```
rect = cv2.minAreaRect(vertices)
box = cv2.boxPoints(rect)
box = np.int0(box)

cv2.drawContours(imgCountour_hand_test, contours: [box], contourIdx: 0, color: (0, 0, 0), thickness: 2)

x, y, w, h = cv2.boundingRect(box)
coin_roi = result[y:y + h, x:x + w]
custom_image_resized = cv2.resize(color_spade, dsize: (w, h))
result[y:y + h, x:x + w] = cv2.addWeighted(coin_roi, alpha: 0, custom_image_resized, beta: 1, gamma: 0)
```

I came up with was to achieve more accurate card detection by utilizing [cv2.minAreaRect()]. However, due to limitations with [cv2.addWeighted], it caused the system to crash. The specific error message received was: error: (-209:Sizes of input arguments do not match) The operation is neither 'array op array' (where arrays have the same size and the same number of channels), nor 'array op scalar', nor 'scalar op array' in function 'cv::arithm_op'

So, in the end, the focus was on ensuring the successful execution of the program. As a result, the following code was retained.



```
x, y, w, h = cv2.boundingRect(vertices)
coin_roi = result[y:y + h, x:x + w]
custom_image_resized = cv2.resize(color_diamonds, dsize: (w, h))
result[y:y + h, x:x + w] = cv2.addWeighted(coin_roi, alpha: 0, custom_image_resized, beta: 1, gamma: 0)
```

System display

Step 1: Remove the background from the image.

Step 2: Start changing the gesture triggering conditions.

Step 3: When the gesture equals [OK], trigger the mechanism to hide the coins.

Step 4: When the gesture is released, the coins appear.