Playing Cards Recognition Using Template Matching

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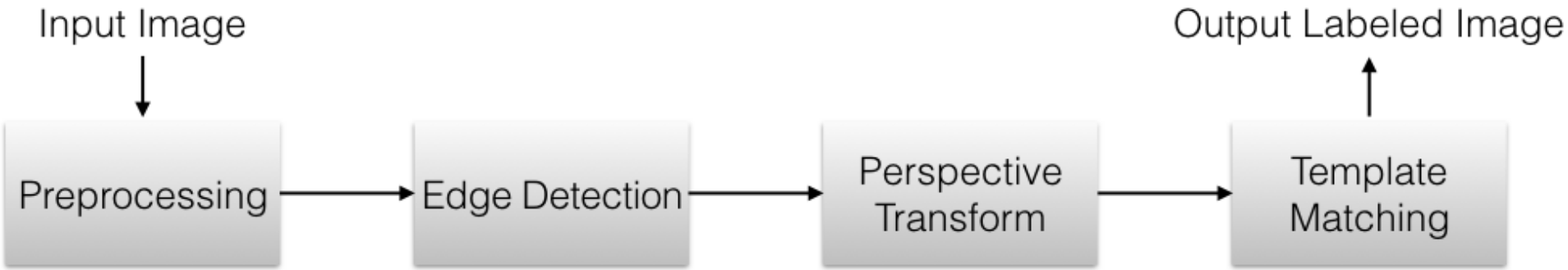
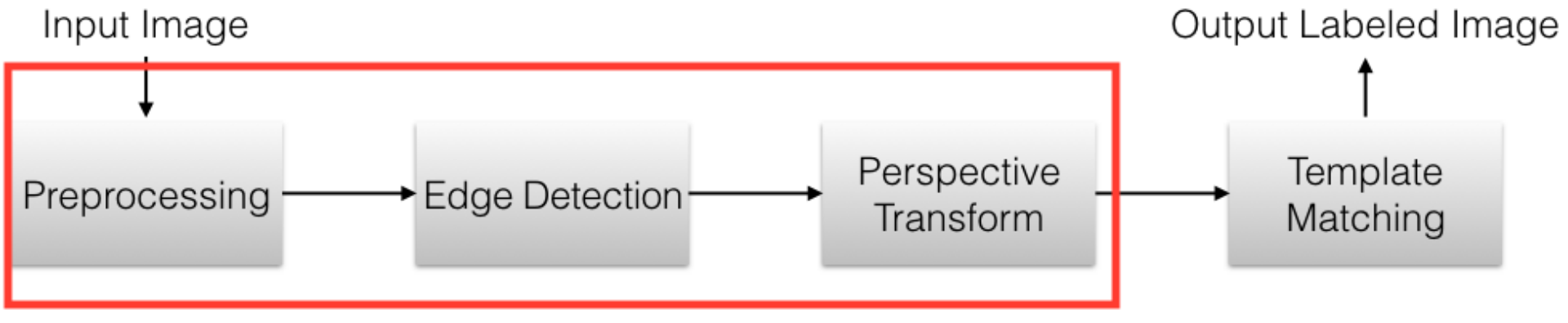
Playing Cards

- 52 different playing cards (we do not consider two joker cards)
- Every card has a rank and a suit
- Rank: A, 2, 3,...,J, Q, K
- Suit: Spade, Heart, Club and Diamond

Overview


Input Image
Preprocessing
Edge Detection
Perspective Transform
Template Matching
Output Labeled Image

Overview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Find Card

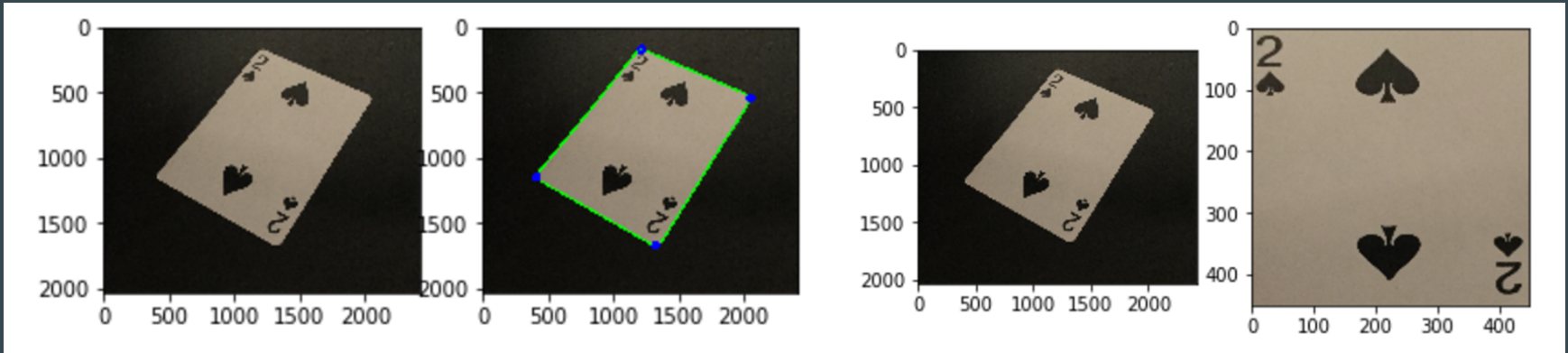
- Preprocessing: Grayscale and blur the input card image to reduce noise
- Edge Detection: Find contour of the input card image

```
_, contours, hierarchy = cv2.findContours(thresh,cv2.RETR_TREE,cv2.CHAIN_APPROX_SIMPLE)
contours = sorted(contours, key=cv2.contourArea,reverse=True)
peri = cv2.arcLength(contours[0],True)
h = cv2.approxPolyDP(contours[0],0.02*peri,True)
x,y,w,height = cv2.boundingRect(contours[0])
```

- Perspective Transform: Rotate the input card image to the same orientation as templates.

```
transform = cv2.getPerspectiveTransform(temp_rect,des)
warp = cv2.warpPerspective(img,transform,(450,450))
```

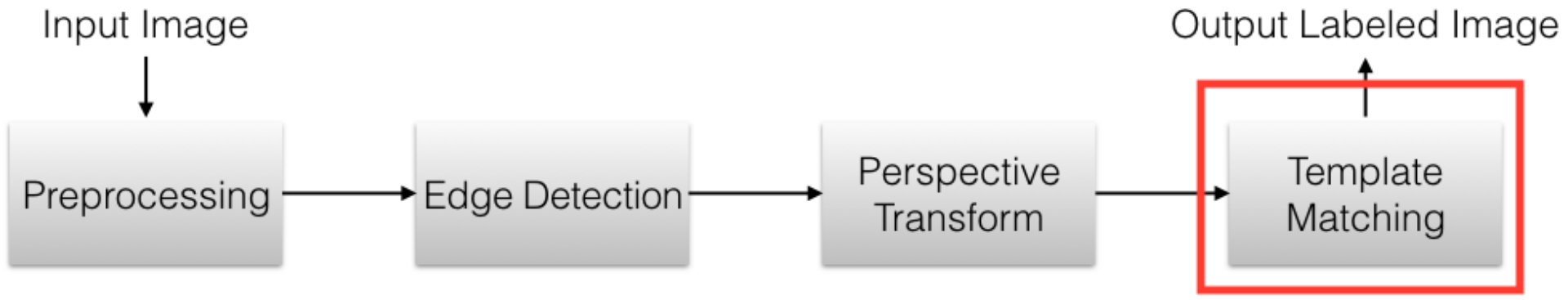
Find Card



Card Contour & Corner Points

Transformed Card

Overview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Template Matching

Use template to slide over input image

Find the location of template in input image

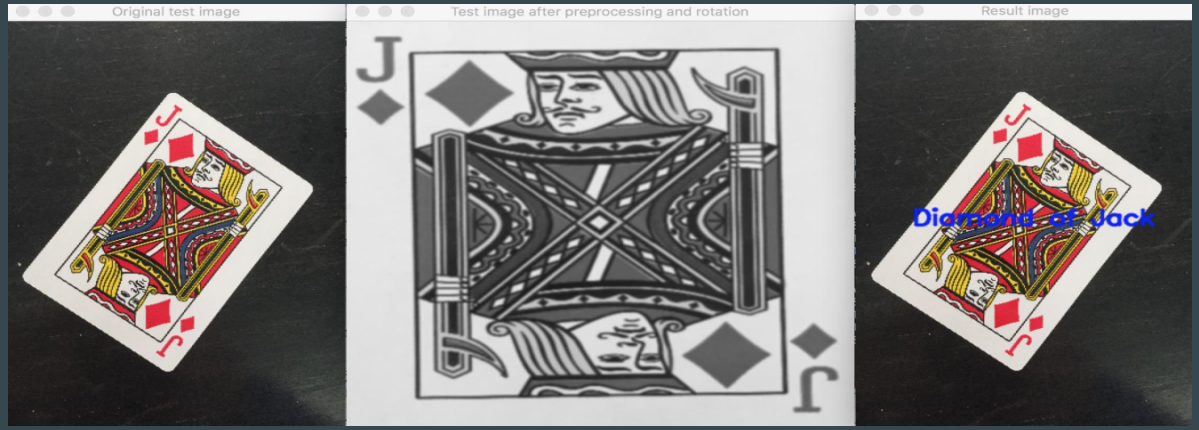
Template

Input Image

Template Matching

```
result = cv2.matchTemplate(edged, template, cv2.TM_CCOEFF)
(_, maxVal, _, maxLoc) = cv2.minMaxLoc(result)
```

- cv2.TM_CCOEFF means coefficient template matching
- cv2.minMaxLoc finds maxVal in result image, which means how much two images match together
- Iterate all templates with input image to find best match



Demo

Questions?

Thanks!