CS 512 Course Project: Playing Card Recognition Using Template Matching

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1 Problem Statement

In this project we will implement an algorithm for playing card detection and identification.We use a deck of playing cards which contains 52 cards with different rank and suit(To simplify, we are not considering two joker cards). This algorithm is achieved through thresholding, edge detection, projective transformation, and template matching.Since the angle and distance are variable, our algorithm robust to these factors. We plan to capture photos from web camera then identifies the cards. Our proposed method can be applied casino poker game analysis.

2 Applied Method

1. Image Capture

   Take images of 52 playing cards with different rank and suit.

2. Templates Determining

   Make templates of 13 ranks and 4 ranks from each card image. The templates are separated into two parts: the positive templates and the reverse template. Templates are generated for future template matching.

3. Playing Card Selection

   Using edge detection to find contour of playing cards, rank and suit.

4. Card Scaling

   Enhance the accuracy of finding contours of pattern by interpolation.

5. Card Rotation

   To achieve rotational invariant, cards are rotated to the same position of the templates
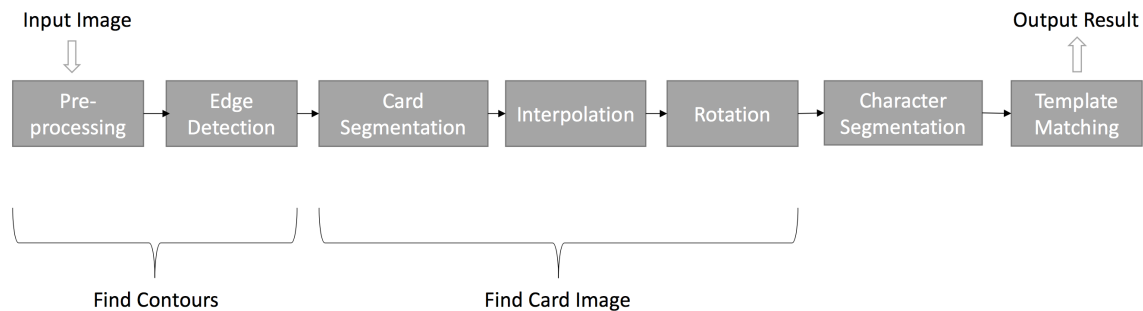
6. Character Segmentation

Extract ROI in each card from top left and bottom right. Segementation features contains rank, suit and inside image.

7. Template Matching

Compare character segmentation with templates to recognize each card.

3 Algorithm Overview

4 Data

Images of a deck of playing cards.

5 Responsibility

Li Xu: 1, 2, 3, 4 in method section
Ai Jiang: 5, 6, 7 in method section

6 References

http://vislab.isr.ist.utl.pt/wp-content/uploads/2012/12/10-pcpr-pimentel.pdf
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