

Pattern Recognition

Presented By

Sabrina Yesmin

ID: 1703310201411

Presented To

Dr. Kaushik Deb

Dept. of Computer Science & Engineering,
Chittagong University of Engineering & Technology

Title

Alphanumeric character recognition using Ncc (Normalize cross correlation) or Template Matching.

- ❑ Alphanumeric characters are those in layouts meant for English language users that are made up of the combined set of the 26 alphabetic characters, A to Z, and the 10 Arabic characters, 0 to 9.
- ❑ In this slide, I am talking about A to Z characters.

Goal



(a) Candidate

(b) Template

(c) Outline

Figure: Processing example of alphanumeric character recognition.

Goal

- ❑ In figure (a) , first I choose a Letter A which is called candidate.
- ❑ Then I choose Template where's my all character's are presents shown in figure (b).
- ❑ Then in figure (c) we can see that candidate A with matched with template A.

Motivation

- ❑ To learn a method which is recognize numeric characters.
- ❑ To Recognize alphabets by using normalize cross correlation.
- ❑ To learn how to match a character from a dataset.

Applications



NID card



License Plate



Bank Check

Figure: Examples of Character recognition applications.

Challenges

- ❑ Uneven Size.
- ❑ Real time recognition.
- ❑ Geometrical Distortion.

Propose Framework

Character recognition

Segmented plate characters

Normalizing by size

A

Candidate alphanumeric characters

Measuring the similarity
by NCC

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Templates

Best matches{ NCC res }

Recognition results

The Proposed Character recognition scheme

Processing Example

- ❑ First I read candidate and template file.
- ❑ Then I show the figure of both candidate and template.
- ❑ Then we convert rgb to gray by using `rgb2gray` function in matlab.
- ❑ Then we convert gray to binary.
- ❑ Then use `ncc` I find the template match with the candidate.
- ❑ In array `i` sort the value of `ncc` and find the maximum value of matched characters.

Conclusion

- ❑ In this project by using ncc we recognize alphanumeric characters.
- ❑ NCC's Merit
 - ✓ Simple and easy to implement.
- ❑ NCC's Demerit
 - ✓ Take long computation time

Reference

- ❑ <https://images.search.yahoo.com/search/images>

Thank You