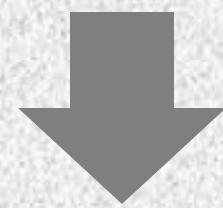# Handwritten Writer Independent Bangla Character Recognition

Research Area: Artificial Intelligence

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What is Bangla Character Recognition?

দিঘল রজনী তার তরে জাগি ঘুম যে হরেছে মোর;
আমার এ ঘর ভাঙ্গিয়াছে যেবা আমি বাঁধি তার ঘর।

Challenges :

Nature of Bangla

☐ *Cursive*

মোদের গরব মোদের আশা, আমরি বাংলা ভাষা ।

☐ *Large alphabet set*

50 characters; 250 compound characters, modified vowels & consonants

☐ *Similar shape character*

অ আ তা   ত ও ও   ঢ ট চ

Handwriting & Others

☐ *Connected characters in handwriting*

☐ *Multiple gray level of characters*
☐ *Overlapping characters and lines*
☐ *Non-uniform background*

মোদের গরব মোদের আশা, আমরি বাংলা ভাষা ।

Phases of Recognition System :

Preprocessing

Grayscale image

→

Binarization & Noise Removal

→

Segmentation

Line Segmentation

→

Word Segmentation

↓

Character Segmentation

←

Feature Extraction

☐ Using multiple features
☐ Using rotation invariant features
☐ Using translation invariant features
☐ Using scale invariant features

←

Recognition and Hypothesis

ভাইয়াছে   or   ভাঙ্গিয়াছে

←

Post processing

☐ Apply when classification rate is not satisfactory
☐ Frequency analysis
☐ Context analysis

Outcome :

☐ This recognition system can recognize with satisfactory level of accuracy.

☐ It can recognize printed and handwritten documents.

☐ It can recognize user independent handwritten documents.

☐ This recognition system is applicable for full size documents (not for isolated characters).

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