

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING Rajshahi University of Engineering & Technology, Bangladesh

A Feature Fusion Based Approach for Handwritten Bangla Character Recognition

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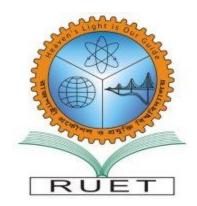
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Heaven's Light is Our Guide



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CERTIFICATE

This is to certify that this thesis report entitled "A Feature Fusion Based Approach for Handwritten Bangla Character Recognition" submitted by Md. Mahin Chowdhury Bipu, Roll: 123071 in partial fulfillment of the requirement for the award of the degree of Bachelor of Science in Computer Science & Engineering of Rajshahi University of Engineering & Technology, Bangladesh is a record of the candidate own work carried out by him under my supervision. This thesis has not been submitted for the award of any other degree.

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ABSTRACT

Optical Character Recognition (OCR) is an abstruse area of pattern recognition. An active branch of OCR is handwritten character recognition. This paper presents Bangla handwritten character recognition based on a feature fusion endeavor. Character recognition mostly depends on impeccable features extracted from input images. Coupling of two distinct feature vectors obtained by Histogram of Oriented Gradients (HOG) and Gabor filter is illustrated here. To evaluate the recognition rate of input characters Extreme Learning Machine (ELM) is used which is a feed-forward neural network. A 5-fold cross-validation scheme has been applied to measure the performance of the system. While using individual feature extraction technique, HOG and Gabor filter show 90.5% and 91.2% accuracy respectively. However, using feature fusion approach provides a better accuracy of 96.1%.

Keywords— Optical character recognition; Feature extraction; Histogram of oriented gradients; Gabor filter; Extreme learning machine.

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