

Enhancement of Handwritten Text Recognition using AI-based Hybrid Approach

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Abstract: Handwritten text recognition (HTR) within computer vision and image processing stands as a prominent and challenging research domain, holding significant implications for diverse applications. Among these, it finds usefulness in reading bank checks, prescriptions, and deciphering characters on various forms. Optical character recognition (OCR) technology, specifically tailored for handwritten documents, plays a pivotal role in translating characters from a range of file formats, encompassing both word and image documents. Challenges in HTR encompass intricate layout designs, varied handwriting styles, limited datasets, and less accuracy achieved. Recent advancements in Deep Learning and Machine Learning algorithms, coupled with the vast repositories of unprocessed data, have propelled researchers to achieve remarkable progress in HTR. This paper aims to address the challenges in handwritten text recognition by proposing a hybrid approach. The primary objective is to enhance the accuracy of recognizing handwritten text from images. Through the integration of Convolutional Neural Networks (CNN) and Bidirectional Long Short-Term Memory (BiLSTM) with a Connectionist Temporal Classification (CTC) decoder, the results indicate substantial improvement. The proposed hybrid model achieved an impressive 98.50% and 98.80% accuracy on the IAM and RIMES datasets, respectively. This underscores the potential and efficacy of the consecutive use of these advanced neural network architectures in enhancing handwritten text recognition accuracy. The proposed method introduces a hybrid approach for handwritten text recognition, employing CNN and BiLSTM with CTC decoder. Results showcase a remarkable accuracy improvement of 98.50% and 98.80% on IAM and RIMES datasets, emphasizing the potential of this model for enhanced accuracy in recognizing handwritten text from images.

Keywords: Handwritten text recognition

