An Integrated YOLO-OCR Framework for Academic Document Verification

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Abstract: *This paper proposes an intelligent system for verifying the authenticity of academic documents and detecting tampering using artificial intelligence methods. The YOLOv8n deep learning model is used for detecting key areas on an image of an academic document, based on an image of the document being verified (e.g., name, roll number, marks, percentage, institutional seal).*

The text created by Optical Character Recognition (OCR) from the identified areas is checked against two different ways of determining whether there has been any tampering or forgery of the document using logical validation of the data in question. For example, whether the percentage computed matches the total amount of marks received.

If any inconsistency exists between the extracted data from the document being verified, as well as from the logical validation, the areas of the document will be marked on the webpage, which shows both visually the document and the results of the verification.

A variety of experiments with test cases show that the current system classifies academic documents into three categories (i.e., legitimate, forged and needing to be confirmed) based on the verification results. Thus, the proposed technique has reduced the time and effort required to manually verify a document and can also assist in detecting academic documents that have possibly been tampered with..

Keywords: *OCR, YOLOv8n, forgery detection, document verification, machine learning, deep learning*