

IMAGE MODIFICATION AND EDIT DETECTION

Abstract:

The rapid proliferation of digital media and sophisticated image editing software has turned image forgery detection into an essential challenge for ensuring the credibility of visual information. This paper introduces a Python-based web application for detecting image modifications that uses a hybrid model integrating deep learning and metadata analysis. A pre-trained Convolutional Neural Network (CNN) is employed for image classification into authentic or tampered images by visual features, and the piexif library is employed for extracting EXIF metadata to recognize inconsistencies that would indicate tampering. Source detection logic is also included in the system to reason about the origin platform (WhatsApp, Facebook) and Google's reverse image search functionality is utilized to add weight to verification through recognition of whether the uploaded picture has been used online before. Experimental analyses show that the model works well in identifying widespread forgery methods like splicing and copy-move, with high precision and recall. The solution is scalable, automated, and easy to use, providing real-world applications in digital forensics, journalism, and fake news detection.