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Abstract

Digital images play an extensive role in our daily life as we are living in the digital and technical era. The images can be a personal or official and can also used as various important purposes such as evidence in court of law, a news item, financial record etc. Forge images are being used as original image to disguise and can be presented as false evidence. Furthermore, image processing softwares, editing tools and internet makes this process quite easy. Anyone can doctor the digital images without leaving visual clues. The activity of doctoring images is decreasing the trust-worthiness of digital images. Therefore, there is essential and effective algorithm which can detect image forgery automatically for authenticity or genuineness of the digital images.

The copy-move (cloning) is a very popular type of forgery which is used to create a digital image doctoring. In this approach, a specific block of image or object is copied and then pasted it to the other portion of the same image to accomplish information hiding. Additionally, the copied area move from the same image, its significant properties namely noise, texture and color palette will be well matched with the remaining part of the image. It will lead to a great remonstrance in identifying and locating the forgery regions.

Although various approaches have been proposed by number of researchers to detect copy-move image forgery (CMFD), still there are some research gaps such as false detection, high execution time and poor accuracy due to various forgery attacks. We have addressed all these issues in proposed algorithms, and new improvements have been suggested to enhance the accuracy as well as reduce the execution time.

This thesis has been divided into six chapters. Chapter 1 introduces the concept of image forgery, classification of forgery, important characteristics and various applications of image forgery. This is followed by a literature review of copy-move image forgery detection techniques along with their merits and demerits.
The method of copy-move image forgery along with major performance metrics namely Accuracy, True Positive Rate (TPR) and False Positive Rate (FPR) has been discussed. An identification of CMFD using image projection profiling with improved performance in accuracy and execution time is discussed in chapter 2.

Chapter 3 and 4 discuss robust and hybrid techniques with their performance in respect of accuracy, TPR, FPR, execution time, dimension reduction as well as after applying various attacks. We have also tested proposed algorithm on public database MICC-220. This database is having total 220 images. Total images are a combination of original image, copy-move forgery images and various attacks are also applied on forge images such as rotation, scaling, compression etc. Chapter 5 presents texture feature extraction method, which is used in various application areas of image processing. Finally, the summary of all work along with contribution and future scope are discussed in chapter 6 followed by list of publications and references at the end.