Improve the Image Tamper Proofing and Recovery Technique Based on DWT

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ABSTRACT

In recent years, as a result of the information technology and the internet unpopularity caused the applications of digital image to be widespread day after day. Also, because of the digital image to be disseminated and revised easily, enabled few people have a chance obtain and tamper the pictures, and to be questioned the accuracy of those primary image and bother the people who are involved as well. The digital image can be divided into ROI (Region of Interest) and ROB (Region of Background) in the JPG2000. There are some scholars raised the method of using the DWT to take the features of ROI into the region of transformation-frequency ROB. Take out the features from the frequency region of ROB bit before the image applications, and carries on with the ROI material comparison and recovery to make sure the accuracy of the image, but the shortcoming is the part of tampering only limited on ROI region. We propose three different methods to improve the image recovery in this paper: First, after one step of image operand, take the low frequency region of ROI bit stochastically insert three backups into ROB of middle frequency when the image region tampered, the part of ROI recovery is determined by the voting from the computer formula. Second, after one step of image operand, take the low frequency region of ROI bit compression by the algorithm of JPEG, and backup to ROB of middle frequency when the image region of ROI tampered, directly recover by backup material. Third, take the low frequency region of ROI bit compression by the algorithm of JPEG, stochastically insert one backup in ROB of middle frequency after one-step DWT. When the image region of ROI tampered, directly recover by backup material. There are some varying degrees of improvement in the recovered quality and the limit of ROI size when these three methods are using to the image recovering.

Keywords : DWT ; Image Tamper ; Image recovery ; ROI ; JPEG

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