ABSTRACT

Copy-move forgery is one of the most commonly used manipulations for tampering digital images. Key point-based detection methods have been reported to be very effective in revealing copy-move evidences, due to their robustness against various attacks, such as large-scale geometric transformations. However, these methods fail to handle the cases when copy-move forgeries only involve small or smooth regions, where the number of key points is very limited. This project proposes a new fragile watermarking based scheme for image authentication and self-recovery for image applications. Theproposed scheme locates image tampering as well as recovers the original image. A host image is broken into 4×4 blocks and QR decomposition is applied by inserting the traces of block wise QR into the least significant bit (LSB) of the image pixels to figure out the transformation in the original image.Ring partitioning can be combined with QR decomposition to improve the accuracy of the analysis. Two authentication bits namely block authentication and self-recovery bits are used to survive the vector quantization attack. The insertion of self-recovery bits is determined with Arnold transformation, which recovers the original image even after a high tampering rate. QR-based watermarking information improves the image authentication and provides a way to detect different attacked area of the watermarked image. The proposed scheme is tested against different types of attacks such as text removal attack, text insertion attack, and copy and paste attack. Compared to the state-of-the art methods, the proposed scheme greatly improves both tamper localization accuracy and the Peak Signal to Noise Ratio (PSNR) of self-recovered image.