

A Novel Quality Assessment for Visual Secret Sharing

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There is a variety of visual data, such as pictures, text, military or medical records, biometric patterns, etc. that need to be protected for privacy reasons. Visual secrets are different from textual secrets, in that the information obtained by perceiving the visual data needs to be protected. Visual secret sharing (or visual cryptography) [1] proposed in 1994 is a practical solution to this. The secret information is encrypted by hiding it into random looking shares. The secret data is encrypted in such a way that the decryption becomes a physical operation that is performed without computer. How much of the secret information can be retrieved depends on the visual quality of the decryption result. However, there is no practical tool for visual quality evaluation currently. The common visual quality metrics such as contrast [2], blackness [3], PSNR [4] and SSIM [5] cannot represent the visual quality properly as we demonstrate in our work. A fair and uniform visual quality metric is needed urgently. We propose a novel approach for visual quality evaluation. It is straightforward to implement and applicable to various applications in visual cryptography.

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