Abstract

The visual secret sharing (VSS) scheme encrypts the secret information into various meaningless shares. These shares are distributed to the authorized participants and the secret information can be retrieved by any k out of n participants by stacking their respective shares on top of each other. This scheme uses HVS (Human Visual System) to decrypt the information, and thus no technical or financial investment is required. Moreover, it is a one-time pad technique, so decrypting the information by an attacker is almost impossible. This paper proposes an improved visual secret sharing technique in which we aim to build upon the random grid approach of visual cryptography and test the feasibility of Recursive Image Hiding to hide multiple secrets at varying levels of the grids generated. Since we are using circular random grids, it is even possible to hide multiple images in the same grids and obtain the secret images for different angles of rotation of the grids. The participants need to be in possession of both the shares, as well as the fixes angle of rotation for which the secret can be obtained, in order to decrypt the image. In case of recursive image hiding, numerous secrets are hidden recursively in the shares of the original images at each level. Shares carry information for the subsequent secrets as well, thus leading to increased capacity. Also, the limitation on the
number of secrets that can be hidden can be overcome because for each grid, multiple secrets can be recursively hidden. Thus, not only will we be able to hide multiple images, but multiple grids as well which in turn carry the information for multiple images.

References

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Index Terms

Computer Science

Image Processing

Keywords

Recursive image hiding  secret message  shares  random grids  threshold  hidden image  rotation.