Abstract

Visual cryptography and random grids are forms of visual secret sharing that encrypt a secret image into indecipherable shares. Decryption occurs by printing them onto transparencies and stacking, but this requires participants to be in the physical presence of each other, so this paper addresses the use of visual secret sharing between remote, incommunicado agents. To this end, a prototype application has been developed to form a subpixel matrix of a photographed share that is one half of a (2, 2) scheme. It is algorithmically "stacked" with its stored complement to decrypt the secret. The implemented algorithms are presented, as well as visual results for variations of three values of three photographic condition metrics. Although only a third of the total results proved positive, recommendations are given regarding photographic conditions to significantly improve accuracy. Furthermore, we suggest a number of applications of this technology.

Index Terms  
Computer Science  Security

Keywords  
Secret Sharing Visual Cryptography Random Grids Augmented Reality Mobile Technology