

A secure and efficient image transmission system for sharing an image with multiple parties

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Secure and efficient digital image transmissions are important as internet transmissions can easily be intercepted or plagiarized. Comparing with point-to-point communication and broadcasting transmission, multicasting transmission is more popular and flexible. The number of transmissions among sources to multiple clients can be huge. For example, if 200 friends share one image with each other every day, the accumulated transmissions will be 280,000 in one week. As an image can be significant in size, compression will also be necessary. Image must be compressed then encrypted for transmission, so the whole process can be slow. Selective encryption, which combines encryption with compression [1][2] has been proposed for media data transmission. Our work is an extension of the previous work [1]. A novel encryption scheme is proposed to ensure both security and efficiency of mass image transmissions. Images can be shared to multiple parties in a fast speed and under a low bandwidth.

[1] Salama, Paul, and Brian King. "Efficient secure image transmission: compression integrated with encryption." *Electronic Imaging 2005*. International Society for Optics and Photonics, 2005.

[2] Shi, Tuo, Brian King, and Paul Salama. "Selective encryption for H. 264/AVC video coding." *Proceedings of SPIE*. Vol. 6072. 2006.