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RESEARCH ARTICLE

JOINT VIDEO COMPRESSION AND ENCRYPTION USING SECURE WAVELET TRANSFORM AND ENTROPY CODING

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Abstract- Algorithmic parameterization and hardware architectures can ensure secure transmission of multimedia data in resource constrained environments such as wireless video surveillance networks, telemedicine frameworks for distant health care support in rural areas, and Internet video streaming. Joint multimedia compression and encryption techniques can significantly reduce the computational requirements of video processing systems. To reduce the computational cost of multimedia encryption, along preserving the properties of compressed video (useful for scalability, and transcoding, and retrieval), which endanger loss by naive encryption. In this system, express the two compression blocks for video coding - a modified frequency transform called as Secure Wavelet Transform or SWT and a modified entropy coding scheme called Chaotic Arithmetic Coding (CAC) is used for video encryption. Experimental results are shown for selective encryption using proposed schemes. The SWT has rational coefficients which allow us to build a high throughput hardware implementation on fixed point arithmetic. In CAC, a large number of chaotic maps can be used to perform coding, each achieving Shannon optimal compression performance.

Keywords: Compression, Frame Extraction, Secure Wavelet Transform, Encryption, Entropy coding.

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