Abstract

In this paper, we present a computationally fast and robust image watermarking system with high embedding capacity. The watermark signal is embedded by quantizing the magnitudes of higher order Zernike moments (ZMs). The use of fast and numerically stable method for ZMs computation is proposed to overcome the high computational complexity and numerical instability at the high order of moments. An 8-way symmetry/anti-symmetry property and recurrence relations for calculation of trigonometric functions are employed to further improve the time and space complexity. Experimental results show that the proposed method provides an excellent tradeoff between embedding capacity, watermark robustness, and visual imperceptibility.

References
An Effective Image Watermarking System for High Embedding Capacity

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Index Terms

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