Print to Scan Resistant Watermarking based on Green Noise Diffusion Method using Machine Learning

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Abstract— **The green-noise diffused watermarking method is resistant to printing and scanning, and the embedded pattern is not easily visible. We extended this method to enable the extraction of watermark information from cropped images by embedding marker patterns. We used machine learning and embedded five green-noise patterns, including four value patterns and one marker pattern. We obtained a correct watermark extraction rate of over 95% from the printed images. We also embedded sub-information in the marker pattern to obtain block synchronization from the cropped images. Furthermore, the introduction of RS codes allowed us to obtain an extraction correctness rate close to 100% from both electronic and printed images.**

Keyword— **Watermarking, Data Hiding, Copyright Protection**

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