FAST, ROBUST AND EFFICIENT 2D PATTERN RECOGNITION FOR RE-ASSEMBLING FRAGMENTED IMAGES

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ABSTRACT. We discuss the realization of a fast, robust and accurate pattern matching algorithm for comparison of digital images implemented by discrete Circular Harmonic expansions based on sampling theory. The algorithm and its performance for re-assembling fragmented digital images are described in detail and illustrated by examples and data from the experimentation on an art fresco real problem. Because of the huge database of patterns and the large scale dimension, the results of the experimentation are relevant to describe the power of discrimination and the efficiency of such method.

AMS subject classification:42C15, 65T50, 68Q25, 68T10, 68U10, 94A08, 94A20.
Key Words: art fresco reconstruction, Circular Harmonic expansions, pattern recognition, rotation invariance, fast computation, sampling theory

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