

## Combinatorial transforms: Applications in lossless image compression

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### Abstract

Common image compression standards are usually based on frequency transform such as Discrete Cosine Transform. We present a different approach for lossless image compression, which is based on a combinatorial transform. The main transform is Burrows Wheeler Transform (BWT) which tends to reorder symbols according to their following context. It becomes one of promising compression approach based on context modeling. BWT was initially applied for text compression software such as BZIP2; nevertheless it has been recently applied to the image compression field. Compression schemes based on the Burrows Wheeler Transform have been usually lossless; therefore we implement this algorithm in medical imaging in order to reconstruct every bit. Many variants of the three stages which form the original compression scheme can be found in the literature. We propose an analysis of the latest methods and the impact of their association and present an alternative compression scheme with a significant improvement over the current standards such as JPEG and JPEG2000.

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**Keywords:** *BWT, Lossless (image) compression, combinatorial transform.*