

## **A High Compression Ratio for a Lossless Image Compression Based on the Arithmetic Coding with the Sorted Run Length Coding: Meteosat Second Generation Image Compression**

**Authors :** Cherifi Mehdi, Lahdir Mourad, Ameer Soltane

**Abstract :** Image compression is the heart of several multimedia techniques. It is used to reduce the number of bits required to represent an image. Meteosat Second Generation (MSG) satellite allows the acquisition of 12 image files every 15 minutes and that results in a large databases sizes. In this paper, a novel image compression method based on the arithmetic coding with the sorted Run Length Coding (SRLC) for MSG images is proposed. The SRLC allows us to find the occurrence of the consecutive pixels of the original image to create a sorted run. The arithmetic coding allows the encoding of the sorted data of the previous stage to retrieve a unique code word that represents a binary code stream in the sorted order to boost the compression ratio. Through this article, we show that our method can perform the best results concerning compression ratio and bit rate unlike the method based on the Run Length Coding (RLC) and the arithmetic coding. Evaluation criteria like the compression ratio and the bit rate allow the confirmation of the efficiency of our method of image compression.

**Keywords :** image compression, arithmetic coding, Run Length Coding, RLC, Sorted Run Length Coding, SRLC, Meteosat Second Generation, MSG

**Conference Title :** ICDIP 2015 : International Conference on Digital Image Processing

**Conference Location :** Paris, France

**Conference Dates :** January 23-24, 2015