

## Image Segmentation: New Methods

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**Abstract :** We present in this paper, first, a comparative study of three mathematical theories to achieve the fusion of information sources. This study aims to identify the characteristics inherent in theories of possibilities, belief functions (DST) and plausible and paradoxical reasoning to establish a strategy of choice that allows us to adopt the most appropriate theory to solve a problem of fusion in order, taking into account the acquired information and imperfections that accompany them. Using the new theory of plausible and paradoxical reasoning, also called Dezert-Smarandache Theory (DSmT), to fuse information multi-sources needs, at first step, the generation of the composites events witch is, in general, difficult. Thus, we present in this paper a new approach to construct pertinent paradoxical classes based on gray levels histograms, which also allows to reduce the cardinality of the hyper-powerset. Secondly, we developed a new technique for order and coding generalized focal elements. This method is exploited, in particular, to calculate the cardinality of Dezert and Smarandache. Then, we give an experimentation of classification of a remote sensing image that illustrates the given methods and we compared the result obtained by the DSmT with that resulting from the use of the DST and theory of possibilities.

**Keywords :** segmentation, image, approach, vision computing

**Conference Title :** ICISVC 2014 : International Conference on Image, Signal and Vision Computing

**Conference Location :** Paris, France

**Conference Dates :** April 28-29, 2014