OWA aggregated distance functions and their application in image segmentation

Ljubo Nedović • Marija Delić • Nebojša M. Ralević

Abstract

In algorithms for image segmentation, distance functions represent a criterion based on which the pixels can be divided into groups of segments. Determination of the segmentation criterion includes several factors. The application of the aggregation operator enables the adjustment of the segmentation criteria according to the intuitively defined criterion. Depending on the characteristics of the applied aggregation operator and the distance functions as basic factors relevant for segmentation, the new distance functions with specified features are obtained. In this article one method for constructing distance functions using ordered weighted averaging aggregation operator is proposed. The application of the constructed functions is illustrated by the segmentation of the image through the "Fuzzy c-means clustering" algorithm for segmentation.

Keywords: aggregation operator, distance function, image segmentation, metric, OWA operators.

AMS classification (2010): 28A75, 47S40, 62H30.