MODERN DIGITAL IMAGE PROCESSING ALGORITHMS, COMPONENTS AND OPERATORS

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Nowadays, digital signal processing is finding its applicability everywhere. By a digitized signal we refer to a discrete representation of a physical quantity (sound, image, pressure, temperature, etc.). In order to extract useful information from these signals, we need to use signal processing algorithms.

In our work, we focus on digital image processing, more narrowly, on the mathematical procedures and operators used in the field. We reviewed the results related to shape-descriptors found in literature, paying special attention to the properties of convexity, orientation and elongation type descriptors. Our goal is to develop new regularization solutions that allow for an increase in quality of the reconstructed images. We compare our results with the ones obtained by reconstruction methods developed and recommended so far.

During our experimental work we use the MATLAB software package. Some of the test images are obtained from real applications, such as CT, MRI, or PET scans.