

A NONSTANDARD HIGHER-ORDER PDE FOR EDGE DETECTION IN MEDICAL IMAGING PROBLEMS

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Abstract

In this work, we address a nonstandard variational energy for important features detection and multiplicative noise removal in medical imaging problems. Our contribution consists in minimizing a $p(\cdot)$ -Bilaplace energy with a variable exponent function $p(\cdot)$. We study the well-posedness of the proposed model and we consider an adaptive choice of $p(\cdot)$ based on the topological gradient method. We give a numerical solution method based on splitting convexity schema and we present several numerical examples to show the robustness of the proposed approach.

Keywords: $q(\cdot)$ -Laplace operator; topological gradient; ultrasound imaging; speckle noise.

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