CONSTRUCT NEW COMPACTLY SUPPORTED RADIAL BASIS FUNCTIONS FOR LANDMARK-BASED IMAGE REGISTRATION

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ABSTRACT. For landmark-based image registration, radial basis functions (RBFs) is an effective strategy. Compactly supported RBFs can lead to better results in local transformation than globally supported BRFs. Since that for globally RBFs, if one landmark changes, the deformation may be occurred in the whole image. Based on the previous evaluation of topology preservation in landmark-based image registration, we found that Matérn functions have good properties. But they have global supports, which is a drawback for very local deformation. For overcoming this disadvantage, we propose a method to construct new compactly supported radial basis functions, which have similar properties as Matérn functions. Numerical results show the advantages and efficiencies of the proposed methods.

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