

Sampling Kantorovich algorithm for the detection of Alzheimer's disease

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Among sampling-type operators, the Sampling Kantorovich operator represents a useful tool for dealing with discontinuous functions [2]. Its multidimensional version has been implemented and allows not only to reconstruct, but also to enhance the resolution of images, as it acts both as a low-pass filter and as a magnifier, increasing spatial resolution of images [4]. Indeed, Sampling Kantorovich algorithm has been used, with satisfactory results, to both biomedical and engineering fields [1, 3].

The talk is focused on some recent results, which consist in the use of different algorithms, including Sampling Kantorovich algorithm, to process magnetic resonance images for the identification of biomarkers for Alzheimer's disease. The quality of reconstruction is evaluated, comparing the volumetric values of the images processed with the various algorithms, with the ground truth values, considered as reference. Moreover, the stereological Cavalieri\Point counting technique is used to infer volumetric data, starting from the knowledge of the planar sections.

References

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