

RBF interpolation and SSIM

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In the field of image reconstruction, the Structural Similarity index (SSIM) is widely used in assessing the similarity between two images. In this talk, first we present and discuss the extension of such index to the *continuous* framework, that is the continuous SSIM (cSSIM) [1]. Then, we relate this index to both the infinity and the L2-norm and, by focusing on the framework of RBF interpolation, we analyse the convergence rate in terms of the cSSIM, also by introducing a weighted version of such index. We provide a concrete explanation about the well-known fact that some images may be close in terms of the SSIM but not with respect to the L2-norm [2]. We show some numerical experiments that confirm the theoretical findings.

References

- [1] F. Marchetti, *Convergence rate in terms of the continuous SSIM (cSSIM) index in RBF interpolation*, Dolomites Res. Notes Approx. 14, pp. 27–32, 2021
- [2] F. Marchetti, G. Santin, *Convergence results in image interpolation with the continuous SSIM*, submitted, 2022.