
An Equivalence Relation between Morphological Dynamics and Persistent Homology in n-D

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Résumé

In Mathematical Morphology (MM), dynamics are used to compute markers to proceed for example to watershed-based image decomposition. At the same time, persistence is a concept coming from Persistent Homology (PH) and Morse Theory (MT) and represents the stability of the extrema of a Morse function. Since these concepts are similar on Morse functions, we studied their relationship and we found, and proved, that they are equal on 1D Morse functions. Here, we propose to extend this proof to n-D, showing that this equality can be applied to n-D images and not only to 1D functions. This is a step further to show how much MM and MT are related.

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