Convexity preserving contraction of digital sets

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Résumé

Convexity is one of the useful geometric properties of digital sets in digital image processing. There are various applications which require deforming digital convex sets while preserving their convexity. In this poster, we consider the contraction of such digital sets by removing digital points one by one. For this aim, we use some tools of combinatorics on words to detect a set of removable points and to define such convexity-preserving contraction of a digital set as an operation of rewriting its boundary word. In order to chose one of removable points for each contraction step, we present three geometrical strategies, which are related to vertex angle and area changes. We also show experimental results of applying the methods to repair some non-convex digital sets, which are obtained by rotations of convex digital sets

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