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# Graph-based Segmentation with Local Band Constraints

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## Abstract

Shape constraints are potentially useful high-level priors for object segmentation, allowing the customization of the segmentation to a given target object. In this work, we present a novel shape constraint, named Local Band constraint (LB), for the generalized graph-cut framework, which in its limit case is strongly related to the Boundary Band constraint, preventing the generated segmentation to be irregular in relation to the level sets of a given reference cost map or template of shapes. The LB constraint is embedded in the graph construction with additional arcs defined by a translation-variant adjacency relation, making it easy to combine with other high-level constraints. The LB constraint demonstrates competitive results as compared to Geodesic Star Convexity, Boundary Band, and Hedgehog Shape Prior in Oriented Image Foresting Transform (OIFT) for various scenarios involving natural and medical images, with reduced sensibility to seed positioning.

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