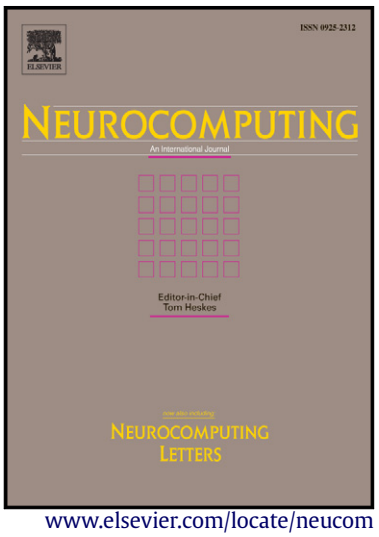

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Shape Completion for Depth Image via Repeated Objects Registration

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Abstract

With the recent advances of low-cost depth sensors, there are increasing research which focus on applications using such devices. A critical issue involved is the processing of the low-quality depth images. This paper presents an example-based method for filling the holes in the depth images. The method utilizes the redundant geometrical information contained in the repeated occurrences of some similar objects, so as to mutually infill these incomplete objects. We first introduce a user-assisted object segmentation to select the objects of interest. Subsequently, the method employs an object recognition procedure to detect the occurrences of the selected objects. Given these detected object instances, we complete each object using the detected partial range data in a registration way. Finally, the completed objects are synthesized back to the original depth image, thus to infill the holes. We demonstrate the effectiveness of the proposed method and the therein algorithms by experiments on several real scenes, which contains repeated objects either of one pattern or multiple patterns.

Keywords: Depth Image, Repeated Objects Detection, Image Inpainting, Non-Rigid Registration, Shape Completion

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