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Depth object recovery using a light line and a regression neural network

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Keywords

shape detection, light line projection, regression neural network, Gaussian approximation

Abstract

A technique for measuring the objects shape is presented. In this technique, the object is scanned using a light line. From the scanning a set of images is captured by a CCD camera. By processing these images, the object surface is recovered. To determine the surface dimensions, a regression neural network is applied. This network is built using data from images of a light line projected onto the objects, with known dimensions. The data are extracted from the images by applying Gaussian approximation. By using the neural network in this technique, the surface measurement is determined without using the parameters of the set-up. It improves the accuracy of the techniques of light line projection for shape detection, because errors of parameters of the set-up are not introduced to the system. This technique is tested in an experimental way and its results are verified with a contact method.



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