

Abstract: Suppression of Nonlinear Frequency Sweep in Laser Range Sensor for Accurate 3D Depth Image Estimation

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Abstract

We propose a compensation technique for reducing the effect of nonlinear frequency sweep in a frequency modulated continuous wave based laser range sensor. The range sensor can acquire the distance information of a remote target, and it can be applied in robotics, automation system, localization, and 3D image techniques. In a frequency modulated continuous wave based range sensor, linear frequency sweep is required for high resolution, and nonlinear frequency sweep can severely degrade the system performance. To solve this nonlinear frequency sweep problem, we use auxiliary delay structure for extracting the nonlinearity and compensating. We show that this technique dramatically improves the system performance.

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