



Implementation of Optical Distance Measurement Using Correlation-Based and Time Stretching Technique on Digital Signal Controller

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Abstract:

Through this paper we aim to measure a distance using an optical signal. The distance measurement is based on the time of the flight (TOF) method via correlation technique. A method of stretching the time scale is used to decrease the operating frequency. A proof of concept using Matlab results in a distance resolution less than 17mm. The algorithm is implemented on a standalone cheap digital signal controller and the measured results show high accuracy comparable to the simulated one. The optical transmitters and optical receivers are implemented using off shelf components.

Keywords:

Distance measurement, TOF, DSC Based System, Phase Correlation.

Published In:

The 32st National Radio Science Conference (NRSC2015) , 32nd , pp. 347-354