

Improvement of Cross Range Resolution in Through Wall Radar Imaging Using Bilateral Backprojection

Authors : Rashmi Yadawad, Disha Narayanan, Ravi Gautam

Abstract : Through Wall Radar Imaging is gaining increasing importance now a days in the field of Defense and one of the most important criteria that forms the basis for the image quality obtained is the Cross-Range resolution of the image. In this research paper, the Bilateral Back projection algorithm has been implemented for Through Wall Radar Imaging. The sole purpose is to enhance the resolution in the cross range direction of the obtained Back projection image. Synthetic Data is generated for two targets which are placed at various locations in a room of dimensions 8 m by 6m. Two algorithms namely, simple back projection and Bilateral Back projection have been implemented, images are obtained and the obtained images are compared. Numerical simulations have been coded in MATLAB and experimental results of the two algorithms have been shown. Based on the comparison between the two images, it can be clearly seen that the ringing effect and chess board effect have been heavily reduced in the bilaterally back projected image and hence promising results are obtained giving a relatively sharper image with relatively well defined edges.

Keywords : through wall radar imaging, bilateral back projection, cross range resolution, synthetic data

Conference Title : ICEET 2014 : International Conference on Electrical Engineering and Technology

Conference Location : Sydney, Australia

Conference Dates : December 15-16, 2014