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Radar Signal Detection Using Neural Networks in Log-Normal Clutter for Multiple Targets Situations

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Abstract : Automatic radar detection requires some methods of adapting to variations in the background clutter in order to control their false alarm rate. The problem becomes more complicated in non-Gaussian environment. In fact, the conventional approach in real time applications requires a complex statistical modeling and much computational operations. To overcome these constraints, we propose another approach based on artificial neural network (ANN-CMLD-CFAR) using a Back Propagation (BP) training algorithm. The considered environment follows a log-normal distribution in the presence of multiple Rayleigh-targets. To evaluate the performances of the considered detector, several situations, such as scale parameter and the number of interferes targets, have been investigated. The simulation results show that the ANN-CMLD-CFAR processor outperforms the conventional statistical one.

Keywords : radat detection, ANN-CMLD-CFAR, log-normal clutter, statistical modelling
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