

An Improved Two-dimensional Ordered Statistical Constant False Alarm Detection

Authors : Weihao Wang, Zhulin Zong

Abstract : Two-dimensional ordered statistical constant false alarm detection is a widely used method for detecting weak target signals in radar signal processing applications. The method is based on analyzing the statistical characteristics of the noise and clutter present in the radar signal and then using this information to set an appropriate detection threshold. In this approach, the reference cell of the unit to be detected is divided into several reference subunits. These subunits are used to estimate the noise level and adjust the detection threshold, with the aim of minimizing the false alarm rate. By using an ordered statistical approach, the method is able to effectively suppress the influence of clutter and noise, resulting in a low false alarm rate. The detection process involves a number of steps, including filtering the input radar signal to remove any noise or clutter, estimating the noise level based on the statistical characteristics of the reference subunits, and finally, setting the detection threshold based on the estimated noise level. One of the main advantages of two-dimensional ordered statistical constant false alarm detection is its ability to detect weak target signals in the presence of strong clutter and noise. This is achieved by carefully analyzing the statistical properties of the signal and using an ordered statistical approach to estimate the noise level and adjust the detection threshold. In conclusion, two-dimensional ordered statistical constant false alarm detection is a powerful technique for detecting weak target signals in radar signal processing applications. By dividing the reference cell into several subunits and using an ordered statistical approach to estimate the noise level and adjust the detection threshold, this method is able to effectively suppress the influence of clutter and noise and maintain a low false alarm rate.

Keywords : two-dimensional, ordered statistical, constant false alarm, detection, weak target signals

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