Abstract

Gamma and neutron detection are typical methods used for detection of Weapons of Mass Destruction (WMD). However, radiation related to gamma-rays can be easily shielded. Moreover, environmental conditions affect the efficiency of current methods for detection of fissile materials, and also reduce the range of detection. Here, a wideband target recognition method is proposed with the ability to detect a target in particular the WMD from a distance and identify the type of the target. As wideband data includes a broad range of frequencies, it can reveal information about both the surface of the target and its content. At first, the presence of the target and its location are estimated. Then, the estimated target is recognized by evaluating collected wideband data with information from wideband signature library which has already been built. Based on the experimental results, it is concluded that the proposed technique can be a promising approach for standoff target detection. As an example, the approach could identify the stainless steel sheet as the target with the best accuracy of 74%. Although the proposed method is designed for WMD detection, it can be extended to any application of target detection.
Remote Detection of Weapons of Mass Destruction using Wideband Radar

References

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Remote Detection of Weapons of Mass Destruction using Wideband Radar

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Index Terms

Computer Science

Wireless
Keywords
Return loss  Target recognition  Wideband radar  WMD detection  Wavelet transform.