World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:13, No:06, 2019

Specific Emitter Identification Based on Refined Composite Multiscale Dispersion Entropy

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Abstract : The wireless communication network is developing rapidly, thus the wireless security becomes more and more important. Specific emitter identification (SEI) is an vital part of wireless communication security as a technique to identify the unique transmitters. In this paper, a SEI method based on multiscale dispersion entropy (MDE) and refined composite multiscale dispersion entropy (RCMDE) is proposed. The algorithms of MDE and RCMDE are used to extract features for identification of five wireless devices and cross-validation support vector machine (CV-SVM) is used as the classifier. The experimental results show that the total identification accuracy is 99.3%, even at low signal-to-noise ratio(SNR) of 5dB, which proves that MDE and RCMDE can describe the communication signal series well. In addition, compared with other methods, the proposed method is effective and provides better accuracy and stability for SEI.

Keywords : cross-validation support vector machine, refined com- posite multiscale dispersion entropy, specific emitter identification, transient signal, wireless communication device
Conference Title : ICICS 2019 : International Conference on Information and Communications Security
Conference Location : San Francisco, United States
Conference Dates : June 06-07, 2019