World Academy of Science, Engineering and Technology
International Journal of Electrical and Computer Engineering
Vol:11, No:11, 2017

Time-Frequency Feature Extraction Method Based on Micro-Doppler Signature of Ground Moving Targets

Authors : Ke Ren, Huiruo Shi, Linsen Li, Baoshuai Wang, Yu Zhou

Abstract : Since some discriminative features are required for ground moving targets classification, we propose a new feature extraction method based on micro-Doppler signature. Firstly, the time-frequency analysis of measured data indicates that the time-frequency spectrograms of the three kinds of ground moving targets, i.e., single walking person, two people walking and a moving wheeled vehicle, are discriminative. Then, a three-dimensional time-frequency feature vector is extracted from the time-frequency spectrograms to depict these differences. At last, a Support Vector Machine (SVM) classifier is trained with the proposed three-dimensional feature vector. The classification accuracy to categorize ground moving targets into the three kinds of the measured data is found to be over 96%, which demonstrates the good discriminative ability of the proposed micro-Doppler feature.

Keywords : micro-doppler, time-frequency analysis, feature extraction, radar target classification
Conference Title : ICASSP 2017 : International Conference on Acoustics, Speech and Signal Processing
Conference Location : Kyoto, Japan
Conference Dates : November 16-17, 2017