In this paper the Authors proposed an autocorrelation feature image construction technique combined with a convolutional neural network (CNN) for emitter waveform classification and a structure optimization for CNN input layer.

1. The Authors in Introduction (29-80) have reviewed of world literature concerning the most important aspects of signal waveform recognition techniques, applied models of neural network structures, the ways of reducing the number of parameters and computational complexity in images classification and recognition.

2. The problem of emitter signal classification is very important in environment monitoring where signals generated by different types of electromagnetic sources (emitters, radars) are in many situations noisy, misshaped or changing in relation to the weather condition, task and application. Presented by the Authors a hybrid model of emitter signal waveform classification with using the convolutional neural networks may also be directly applied in electronic warfare systems for emitter recognition and identification, thus the following articles concerning the similar problem are also supposed to be listed in the References:


3. The successive steps of proposed method and way of solution are correctly presented with the sufficient details in Sections 3 and 4. Additionally, in understanding the proposed method are very useful illustrations shown in Figures 1 to 14.

4. The experiment results based on simulated data are properly illustrated in Figures 15 to 18 and in Tables 4 and 5. The obtained results for proposed hybrid model in comparison with competitive literature algorithms give a higher recognition rate.

5. The proposed method with appropriate formulas, equations and symbols are correctly defined. Additionally, for understanding the proposed method and obtained calculation results are very useful illustrations depicted in Figures 15-18 and Tables 4 and 5.

6. The proposed by Authors the hybrid model of emitter signal waveform classification based on autocorrelation and time-frequency analysis gives the better performance and recognition improvement than the original CNN structure what prove its utility.

Remarks:

1. The word “where” should be written in a small letter after equation (lines 147, 149,157, 171,176, 202, 276) because it is the further part of sentence.
2. Not all abbreviations are deciphered, for example:
   ECG –line 77, BiLSTM –line 94, IF –line 112, GPU and CPU –line 121, NCFM –in Table1, PSNR –line 400, RPSC –line 560, SCDAE –line 561.
3. The authors use two different concepts: the mean square deviation (Eq. 18) and the mean square error (Eq. 28). Do they mean the same concept of error?
4. Could the Authors provide for what values of time and frequency are illustrated the images in Figures 3, 4, 7, 8 and 9. The axis (horizontal and vertical) are not described.
5. Based on the calculation made could the Authors give few sentences in Conclusions about possibility of recognition the different type of emitter signal mode.

The paper correctly describes the problem of emitter signal waveform recognition and classification, the way of solution and correctly presents the results of computational experiments achieved for the simulated data. The obtained research results may be directly applied in electronic warfare systems for emitter signals identification or classification.

The Authors consider the problem and proposed its solution which is relevant and interesting for publication after making these pointed corrections.

However, I cannot recommend the current manuscript for publication unless the current version is revised. After providing the answers to the questions above, the work is supposed to be reviewed once again.