

INVESTIGATION ON THE POSSIBILITY OF USING ENTROPY APPROACH FOR CLASSIFICATION AND IDENTIFICATION OF FROG SPECIES

Abstract

Animal species identification based on their sound has received attentions from researchers. This is to establish fast and efficient identification method. Identification of frogs have been one of the examples where research activities have shown some progress. Mel Frequency Cepstrum Coefficient (MFCC) and Linear Predictive Coding (LPC), coupled with k-th Nearest Neighbor (k-NN) or Support Vector Machines (SVM) have been the favorite approaches used by researchers. Quite recently, a new classification and identification method of sound using entropy-based approach for species identification of Australian frogs was proposed. Shannon, Rènyi and Tsallis entropy were used as features of extraction for the purpose of pattern recognition. Result shows that the full entropy-based animal sound identification system has successfully identified most of the frog species used in this study. The overall classification accuracy is as high as 91% with two failures from nine samples at 70% and 40%, respectively. A comparative analysis highlights the advantages of full entropy approach over conventional frequency spectral and hybrid methods. This is shown especially in the running time of a computer that required to complete the species identifications process. The result presented in this paper indicates that full entropy-based method can be used for faster frog species identification.