

## **Acoustic classification of Australian anurans based on hybrid spectral-entropy approach**

### **Abstract**

A new hybrid method for automated frog sound identification, using spectral centroid, Shannon entropy and Renyi entropy is proposed. The advantage of using entropy based information theoretic approach for analyzing complexity of bioacoustics signals in animal vocalization is discussed. Sound samples from nine species of Microhylidae frogs are first segmented into syllables. Fourier spectral centroid, Shannon entropy and Renyi entropy of the syllables are then determined. Finally, nonparametric k-th nearest neighbour (k-NN) classifier is used to recognize the frog species based on these three extracted features. Result shows that the k-NN classifier based on these selected features is capable to identify the species of the frogs with an average accuracy of 98%. It is found that the accuracy reduces significantly only when the noise levels higher than -20 dB. (C) 2011 Elsevier Ltd. All rights reserved.