

Anuran Calls (MFCCs) Data Set

Download: [Data Folder](#), [Data Set Description](#)

Abstract: Acoustic features extracted from syllables of anuran (frogs) calls, including the family, the genus, and the species labels (multilabel).

Data Set Characteristics:	Multivariate	Number of Instances:	7195	Area:	Life
Attribute Characteristics:	Real	Number of Attributes:	22	Date Donated	2017-02-24
Associated Tasks:	Classification, Clustering	Missing Values?	N/A	Number of Web Hits:	48740

Source:

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Data Set Information:

This dataset was used in several classifications tasks related to the challenge of anuran species recognition through their calls. It is a multilabel dataset with three columns of labels. This dataset was created segmenting 60 audio records belonging to 4 different families, 8 genus, and 10 species. Each audio corresponds to one specimen (an individual frog), the record ID is also included as an extra column. We used the spectral entropy and a binary cluster method to detect audio frames belonging to each syllable. The segmentation and feature extraction were carried out in Matlab. After the segmentation we got 7195 syllables, which became instances for train and test the classifier. These records were collected in situ under real noise conditions (the background sound). Some species are from the campus of Federal University of Amazonas, Manaus, others from Mata Atlântica, Brazil, and one of them from Córdoba, Argentina. The recordings were stored in wav format with 44.1kHz of sampling frequency and 32bit of resolution, which allows us to analyze signals up to 22kHz. From every extracted syllable 22 MFCCs were calculated by using 44 triangular filters. These coefficients were normalized between -1 $\hat{=}$ mfcc $\hat{=}$ 1. The amount of instances per class are:

Families:

Bufonidae 68
Dendrobatidae 542
Hylidae 2165
Leptodactylidae 4420

Genus:

Adenomera 4150
Ameerega 542
Dendropsophus 310
Hypsiboas 1593
Leptodactylus 270
Osteocephalus 114
Rhinella 68
Scinax 148

Species:

AdenomeraAndre 672
AdenomeraHylaedactylus 3478

Ameerega trivittata 542
Hyla minuta 310
Hypsiboas cinerascens 472
Hypsiboas cordobae 1121
Leptodactylus fuscus 270
Osteocephalus ophelia 114
Rhinella granulosa 68
Scinax ruber 148

Attribute Information:

Mel-frequency cepstral coefficients (MFCCs) are coefficients that collectively make up an mel-frequency cepstrum (MFC). Due to each syllable has different length, every row (i) was normalized according to $MFCCs_i / (\max(\text{abs}(MFCCs_i)))$.

Relevant Papers:

1) COLONNA, J. G.; CRISTO, M.; SALVATIERRA, M.; NAKAMURA, E. F.
An Incremental Technique for Real-Time Bioacoustic Signal Segmentation.
Expert Systems with Applications, v. 42, p. 7367-7374, 2015.

2) COLONNA, J. G.; GAMA, J.; NAKAMURA, E. F.
How to Correctly Evaluate an Automatic Bioacoustics Classification Method.
In: 17th Conference of the Spanish Association for Artificial Intelligence (CAEPIA).
Lecture Notes in Computer Science. 986ed.: Springer International Publishing, 2016, v. , p. 37-47.

3) COLONNA, J. G.; GAMA, J.; NAKAMURA, E. F.
Recognizing Family, Genus, and Species of Anuran Using a Hierarchical Classification Approach.
Lecture Notes in Computer Science. 995ed.: Springer International Publishing, 2016, v. 9956, p. 198-212.

4) COLONNA, J. G.; RIBAS, A. D.; SANTOS, E. M.; NAKAMURA, E. F.
Feature Subset Selection for Automatically Classifying Anuran Calls Using Sensor Networks.
In: International Joint Conference on Neural Networks, 2012, Brisbane.
Proceedings of the International Joint Conference on Neural Networks (IJCNN 2012), 2012. p. 1-8. IEEE

5) COLONNA, J. G.; PEET, T.; FERREIRA, C. A.; JORGE, A. M.; GOMES, E. F.; GAMA, J. (2016, July).
Automatic Classification of Anuran Sounds Using Convolutional Neural Networks.
In Proceedings of the Ninth International C* Conference on Computer Science & Software Engineering (No. C3S2E '16, pp. 73-78).
ACM.

6) COLONNA, J. G.; CRISTO, M.; NAKAMURA, E. F. (2014, August).
A Distributed Approach for Classifying Anuran Species Based on Their Calls.
In Pattern Recognition (ICPR), 2014 22nd International Conference on (pp. 1242-1247). IEEE.

7) RIBAS, A. D.; COLONNA, J. G.; FIGUEIREDO, C. M. S.; NAKAMURA, E. F.
Similarity clustering for data fusion in wireless sensor networks using k-means
The 2012 International Joint Conference on Neural Networks (IJCNN 2012), p. 1-7. IEEE

8) DIAZ, J. M.; COLONNA, J. G.; SOARES, R. B.; FIGUEREIDO, C. M. S.; NAKAMURA, E. F.
Compressive sensing for efficiently collecting wildlife sounds with wireless sensor networks
21st International Conference on Computer Communications and Networks (ICCCN 2012), p. 1-7. IEEE

Citation Request:

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