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Bird Species Detection From Voice Features

Rachana B*, Kavya Hegde, Navya Bhat
Department of Computer Science, Srinivas Institute of Technology, Mangalore, Karnataka, India

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ABSTRACT

The objective is naturally recognize which types of bird is available in a sound data set utilizing regulated learning. Contriving successful calculations for bird species order is a fundamental advance toward separating valuable natural information from accounts gathered in the field. Here Naïve Bayes calculation to characterize bird voices into various species dependent on 265 highlights removed from the chipping sound of birds. The difficulties in this undertaking included memory the executives, the quantity of bird species for the machine perceive, and the jumble in signal-to-clamor proportion between the preparation and the testing sets. So to settle this difficulties we utilized Naïve Bayes calculation from this we got great precision in it. The calculation Naive Bayes got 91.58% exactness.

Keywords: Machine Learning, PC frameworks, Pseudo Code

I. INTRODUCTION

The mechanism of sound production from the vocal tract or vocalization in short, of each animal is different from another. Birds are numerous and easier to monitor than other species. There are many practical reasons behind the monitoring and locating a particular bird. First, ornithologists are always curious to locate a bird and study about it. Second, birds are endangered by different human activities like deforestation, poaching and overgrazing. Identification of a bird by its songs or calls can help in bird population census and thereby acts as an aid for conservation of bird species. Third, birds create security issue near airports. Hence identification of birds and their population census/control is important in present scenario.

This paper utilizes data set that contains bird tunes recorded in explicit geographic locale. Extraction of various highlights ordinarily found in solid order and discourse acknowledgment to get applicable qualities, and choice methodology for recognizable proof, where Machine Learning (ML) calculations are utilized to prepare utilized classifiers utilizing named data set of recently known types of revenue. Consequently recognize which types of bird is available in a sound account utilizing directed learning. Devising effective algorithms for bird species classification is a preliminary step toward the variety of voice collected. algorithms for bird species classification is a preliminary step toward the variety of voice collected.

II. METHODS AND MATERIAL

Arrangement of this framework is finished utilizing Machine Learning approach. Machine Learning is logical investigation of calculation statical models that PC frameworks use to play out a particular assignment without utilizing express directions. Naive Bayes is a learning strategy for which a straightforward plan explicit property determination approach has shown great outcomes. Albeit this strategy manages arbitrary characteristics, it's the possibility to be misdirected when there are conditions among credits,and especially when repetitive ones are added. In any case,great outcomes have been accounted for utilizing the forward choice calculation which is better ready to identify when an excess property is going to be added than the regressive disposal approach related to a truly straightforward, nearly naïve metric that decides the normal of a characteristic subset to be essentially the exhibition of the learned calculation on the preparation set.

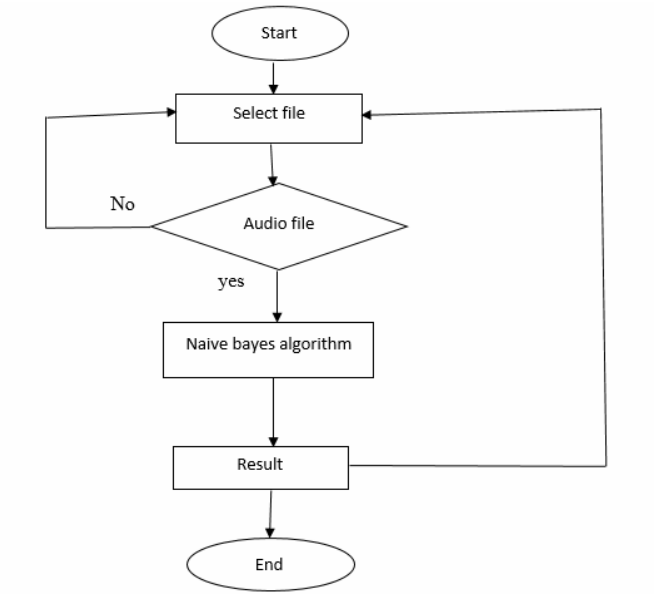

Fig.1 Flowchart for Bird species detection from voice features

Pseudo Code for Pre-processing and Feature Processing

Step 1: Read from read_csv
Step 2: Read audio file based on file_id
Step 3: Fetch sg, mask, data, audio_mask, sample_rate
Step 4: Determine window size
Step 5: Extract features from each audio file For each audio frame get Species, genus, spec_centr_, chromogram_ update weight file
Step 6: write weight file to external csv file

Prediction

Step 1: Read Input Audio File
Step 2 : Fetch sg, mask, data, SampleRate, Audio_Marks
Step 3: Extract Features
Step 4: Import weight file
Step 5: Compare Model weights with Input audio features
Step 6: Displays Bird Species Name

Procedure for Bird Voice Recognition in Non-Realtime

Step 1: Start
Step 2: Choose the audio file
Step 3: if button is equal to Naïve Bayes then Naïve Bayes algorithm is used for recognition.
Step 4: Bird Species displayed
Step 5: End

III. RESULTS AND DISCUSSION

- A genuine positive test outcome is one that identifies the condition when the condition is available.
- A genuine negative test outcome is one that doesn't distinguish the condition when the condition is missing.
- A positive test outcome is one that identifies the condition when the condition is missing.

- A negative test outcome is one that doesn't distinguish the condition when the condition is available. Allow TP to mean the quantity of genuine positives, TN the quantity of genuine negatives, FP the quantity of bogus positives, and FN the quantity of bogus negatives.
- Sensitivity estimates the capacity of a test to identify the condition when the condition is available. Subsequently, Sensitivity = TP/(TP+FN).
- Specificity estimates the capacity of a test to effectively bar the condition (not distinguish the condition) when the condition is missing. Along these lines, Specificity = TN/(TN+FP).
- Predictive worth positive is the extent of positives that relate to the presence of the condition. Subsequently, Predictive worth positive = TP/(TP+FP).
- Predictive worth negative is the extent of negatives that relate to the shortfall of the condition. Accordingly, Predictive worth negative = TN/(TN+FN).

TABLE I. *CORRELATION TABLE*

		Reference variant set	
		Positive	Negative
Variants called by the Algorithm	Positive	True Positive(TP) Correct variant allele or position call	False Positive(FP) Incorrect variant allele or position call
	Negative	False Negative(TP) Incorrect reference genotype or no call	True Positive(TP) Correct reference genotype or no call

The training dataset consist of 265 bird audios. In non-real time the dataset consists of 265 bird's voices. It consists of both voice and noises then using Naïve Bayes algorithm it will separate both noises and bird voice. Then it will recognise the bird species.

TABLE II. RESULT ANALYSIS

Algorithm Name	No. of Testing audio	TP	TN	FP	FN	Result
Naïve Bayes	265	242	0	0	23	0.9158

IV. CONCLUSION

The Bird species detection is increasingly important role in markets. The application developed addresses the problem of manual detection of non-real time bird voices. The project demonstrates a novel Naïve Bayes method to recognize the bird species in non-real. The experiments demonstrate that the Naïve Bayes obtained 91.58% classification accuracy in non-real-time. Using the audio file, then choose the algorithm and then we can find the bird species.

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