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BIRD SPECIES IDENTIFICATION USING DEEP LEARNING

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Abstract:

Now a day some bird species are being found rarelyband if found classification of bird species prediction isbdifficult. Naturally, birds present in various scenarios appearbin different sizes, shapes, colors, and angles from humanbperspective. Besides, the images present strong variations tobidentify the bird species more than audio classification. Also, human ability to recognize the birds through the images is more understandable. So this method uses the Caltech-UCSD Birds 200 [CUB-200-2011] dataset for training as well as testing purpose. By using deep convolutional neural network (DCNN) algorithm an image converted into grey scale format to generate autograph by using tensor flow, where the multiple nodes of comparison are generated. These different nodes are compared with the testing dataset and score sheet is obtained from it. After analyzing the score sheet it can predicate the required bird species by using highest score. Experimental analysis on dataset (i.e. Caltech-UCSD Birds 200 [CUB-200-2011]) shows that algorithm achieves an accuracy of bird identification between 80% and 90%.The experimental study is done with the Ubuntu 16.04 operatingsystem using a Tensor flow library.

I INTRODUCTION

Monitoring birds by their sound is very important for several environmental and scientific purposes. A range of crowdsourcing and remote monitoring projects now record these sounds and a few analyses the sound automatically. The audio modality is well-suited to bird monitoring because many birds are way more clearly detectable by sound than by vision or other indicators. Overview the techniques used for bird species detection, and specific issues to be addressed. Then describe a knowledge challenge which introducing, with new public datasets, as an

initiative to advance the state of the art. First, though, must outline the applications that bird detection in audio is beneficial. The foremost basic is that the simple estimation of presence/absence in a very given sound clip: a detector outputs a zero if none of the target species are detected and a 1 otherwise. The user should operate the software that's NonReal time. This paper uses dataset that contains bird songs collected from kaggle. The fundamental methodology is Support vector machine (SVM) is extremely preferred by many because it produces significant accuracy with less computation power. SVM may be used for both regression and classification tasks. But, its widely utilized in classification objectives.

II SURVEY OF RESEARCH

1. Paper Name: Bird Species Identification using Audio Signal Processing and Neural Networks Author: Dr. Amol Dhakne, Vaishnav M. Kuduvan, Aniket Palhade, Tarun Kanjwani, Rushikesh Kshirsagar Abstract : In this work, automatic bird species recognition systems were developed, and their identification methods were investigated. Automatically identifying bird calls without physical intervention has been a large and tedious endeavor for major studies in various subfields of taxonomy and other ornithology. This task uses a two-step identification process. In the first phase, an ideal dataset was created containing all recordings of different bird species. Next, the sound clip was subjected to various sound pre-processing techniques such as pre-emphasis, framing, silence removal, and reconstruction.

2. Paper Name: A Survey On Bird Species Identification Using Audio Signal Processing And Neural Network Author: Prof. Pooja Wale , Abhishek Mankar , Pratik Padale , Sanket Gawade , Prasanna Ghogare Abstract: an automatic bird species recognition system has been developed and methods for their identification has been investigated. Automatic identification of bird sounds without physical intervention has been a formidable and onerous endeavor for significant research on the taxonomy and various other sub fields of ornithology. In this pa- per, a two- stage identification process is employed. The first stage in- volved construction of an ideal dataset which incorporated all the sound recordings of different bird species. Subsequently, the sound clips were subjected to various sound preprocessing techniques like pre- ephasis, framing, silence removal and reconstruction.

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Existing System:

The identification can be done through image, audio or video. An audio processing technique makes it possible to identify by capturing the audio signal of birds. But, due to the mixed sounds in environment such as insects, objects from real world, etc. processing of such information becomes more complicated. Usually, human beings find images more effective than audios or videos. So, an approach to classify bird using an image over audio or video is preferred. Bird species identification is a challenging task to humans as well as to computational algorithms that carries out such a task in an automatic fashion.

Proposed System:

In this paper author is describing concept to identify species of birds by using python TENSORFLOW and Deep Learning algorithm. Earlier technique were using birds voice or videos to predict it species but this technique will not give accurate result as audio may contains background or other animal voices. So images can be best option to identify species of birds. To implement this technique we need to train all birds species and generate a model and then by uploading any image deep learning algorithm will convert uploaded image into gray scale format and apply that image on train model to predict best match species name for uploaded image. To train bird species we are using 'Caltech-UCSD Birds 200(CUB-200-2011)' dataset which contains 200 species or categories of birds. Model will be built using that dataset and tensor flow deep learning algorithm. So the main aim of this project is to identify species of birds.

WORKING METHODOLOGY

System Implementation is that the stage where the theoretical design is converted into a working system, the new system is additionally totally new, replacing an existing manual, or automated system or its visiting be a major modification to an existing system. The system is implemented using VISUAL STUDIO CODE and data set. In this project use svm method for implementation it's a supervised learning algorithm which may use for binary classification or regression. It's a coordinate of individual observations. It's supported decision planes which defines decision boundaries. The system is constructed on environments namely using Non-Real Time Bird voices.

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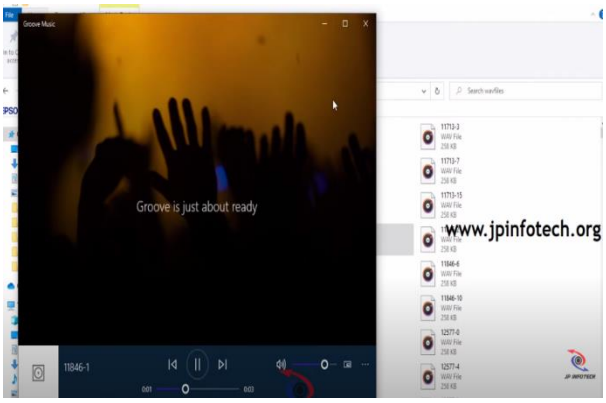

Fig.1. Data set details.

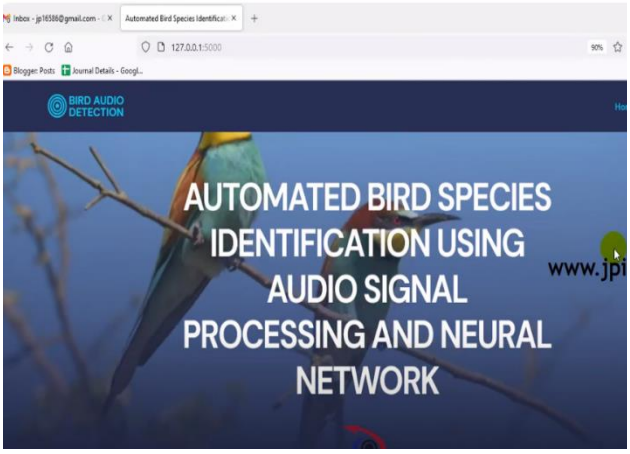

Fig.2. GUI with web page.

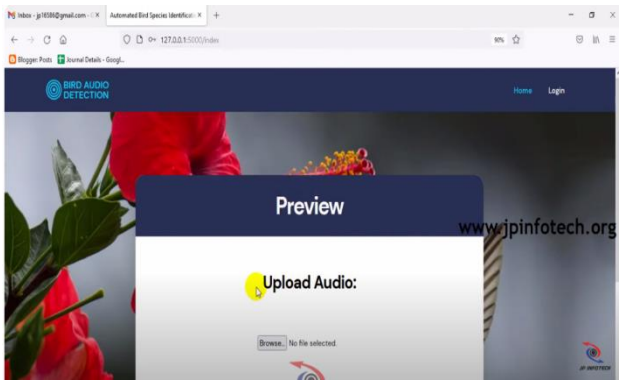

Fig.3. Upload audio.

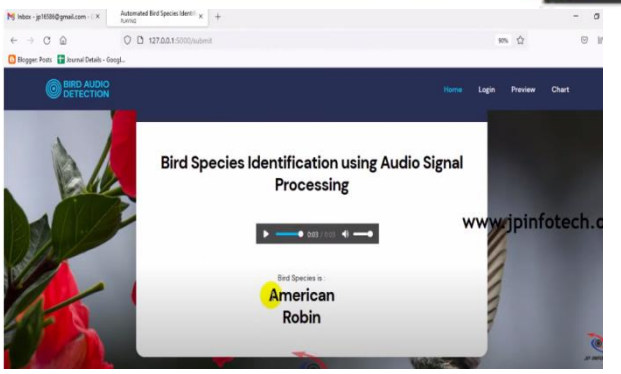

Fig.4. Output results.

CONCLUSION

The project "Automatic bird recognition using signal processing and neural networks" is a commitment to enable bird species identification based on their vocalizations. This project uses the Convolutional Neural Networks (CNN) algorithm to describe audio clip and identify bird species. The project achieved great results in confirming the accuracy of bird species. The CNN algorithm can classify bird species with an accuracy approximately 80% accuracy. Overall, this project demonstrates the potential of bird species identification using advanced machine learning techniques, such as CNN, for automatic. This has important implications for ecological research and conservation efforts because it allows for more efficient and accurate monitoring.

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