Chapter 13
Voice and Speech Recognition Application in Emotion Detection:
A Utility for Future Trends

Tushar Anand
ABES Engineering College, India

Sarthak Panwar
ABES Engineering College, India

Shubham Sharma
ABES Engineering College, India

Rohit Rastogi
https://orcid.org/0000-0002-6402-7638
ABES Engineering College, India

Mayank Gupta
Eli Lilly and Company, India

ABSTRACT

Emotion detection from voice signals is needed for human-computer interaction (HCI), which is a difficult challenge. In the literature on speech emotion recognition, various well known speech analysis and classification methods have been used to extract emotions from signals. Deep learning strategies have recently been proposed as a workable alternative to conventional methods and discuss several recent studies have employed these methods to identify speech-based emotions. The review examines the databases used, the emotions collected, and the contributions to speech emotion recognition. The speech emotion recognition project was created by the research team, which recognizes human speech emotions. The research team developed this project using Python 3.6. The RAVDEESS dataset was also used since it contained eight distinct emotions expressed by all speakers. The RAVDESS dataset, Python programming languages, and Pycharm as an IDE were all used by the author team.

PROBLEM STATEMENT

The Manuscript deals with the exploration and normalization of the data. As a performance measure for conversational analysis, SER (speech Emotion Recognition) may be used to categorize calls based on emotions and assess customer happiness, which enables businesses to enhance their services. The challenge is to design automated software for this purpose.

MOTIVATION OF STUDY

In this era of technology, one of the major concerns is the self's emotions. To overcome this problem, this research work analyses a person's speech and determines emotion. The motivation for this paper is to face the problem which is emotion itself.

Human beings as a species of higher intelligence show various emotions. Due to this, it is necessary to understand the emotions which are conveyed in speech. The basic human emotions can be categorized as happiness, sadness, fear, disgust, anger, and surprise. Furthermore, these are further classified into complex emotions such as awe, guilt, envy, etc. It is therefore in our interest to understand these emotions.

OBJECTIVES OF RESEARCH

The area of voice recognition that is expanding in acceptance and reputation is emotion recognition. This assignment attempts to apply deep learning to detect the sentiments from the data, even though there exist methods for understanding sentiment using a machine learning approach.

In this research project, the research team has built a model that may recognize emotions from sound files using an unsupervised learning algorithm known as an MLP-Classifier. The objective of speech emotion recognition is to detect the presence of frustration or annoyance in the speaker's voice by using the librosa libraries in python and the RAVDESS dataset.

SCOPE OF STUDY

This project works on how one can use audio files to detect emotions. Various audio files are processed, searched, and then resulted in different sets of emotions like sad, happy, and nervous. One of the Purposes of this study is to make human-system interaction more effective.

As of now, the system is working on the detection of audio files that is capable of detecting single audio files but not grouped audio files. More accurate implementation of the detection of voice can be done by clearing the audio files that are mixed with the background disturbances and also the pauses in between the audio files that lower the accuracy of our results. The features of different types of voices of different domains can also be loaded to make the best effective output of emotions through voice.

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