Chapter 11
Language Classification and Recognition From Audio Using Deep Belief Network

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ABSTRACT

The main objective is to recognize the chat from social media as spoken language by using deep belief network (DBN). Currently, language classification is one of the main applications of natural language processing, artificial intelligence, and deep learning. Language classification is the process of ascertaining the information being presented in which natural language and recognizing a language from the audio sound. Presently, most language recognition systems are based on hidden Markov models and Gaussian mixture models that support both acoustic and sequential modeling. This chapter presents a DBN-based recognition system in three different languages, namely English, Hindi, and Tamil. The evaluation of languages is performed on the self built recorded database, which extracts the mel-frequency cepstral coefficients features from the speeches. These features are fed into the DBN with a back propagation learning algorithm for the recognition process. Accuracy of the recognition is efficient for the chosen languages and the system performance is assessed on three different languages.

INTRODUCTION

An automatic Language Classification and Recognition is the task of automatically recognizing a language from the given spoken utterance. It is the process of classifying an utterance as belonging to formerly encountered languages. "Automatic", means the decision is performed by machine, it means the process is independent of content, context, task, vocabulary, sex, age as well as noise by the communication channel. Language Recognition is one of the most basic steps in natural language processing tasks like summarization, question answering and machine translation need to know the language of a given text in order to process it. Language classification is one of the most important applications of Data Analytics with Deep Learning.

OVERVIEW OF LANGUAGE RECOGNITION AND CLASSIFICATION

Language classification is the method of categorizing the languages from its audio speeches and take out the information presented in the speeches. It is used to recognize the language of the particular audio and to reduce the complexity of the audio sample. It plays a very important role and responsibilities for audio, speech and language processing applications.

Types of Language Recognition

The language recognition can be divided into two main types, namely

- Audio language recognition
- Visual language recognition

Audio Language Recognition

Audio language recognition is a mature technology, able to discriminate quite reliably between tens of spoken languages spoken by speakers that are unknown to the system, using just a few seconds of representative speech.

Visual Language Recognition

In this method information derived from the visual appearance and movement of the mouth to recognize the spoken language, without the use of audio information.

CHARACTERISTICS OF LANGUAGES

The characteristics of languages are known as Language Identification cues. The following characteristics differ from one language to another language.

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