

建立語者韻母音色模型並應用於 非限定語詞式之語者驗證

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摘要

以非限定語詞方式進行語者驗證，較以限定語詞方式增加了許多彈性。但是，因為用來比對的語句，其中的語詞並不相同，故難以做直接的對應。然而，儘管語句不同，其中之字音卻是由相同的音素集所建構而成。音素包括聲母與韻母，一般而言，單韻母的數目較聲母為少，且在語句中韻母出現的時間長度及音量都較聲母為大，適合用來做為比對音色的基礎。本文所提出的方法是先為5個國語中的基本單韻母建立頻譜模型。其次，再用這些模型來分析一個語者的語句，偵測出其中出現的單韻母音，並用以建立起該語者的一個韻母音色模型。在驗證2組語句之語者是否為同一人時，我們先分別自兩組語句建立起兩個語者的音色模型，再藉著比對此二模型之相似程度來進行驗證。

關鍵詞：非限定語詞、語者模型、語者驗證、頻譜正規化、韻母識別

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Building Speaker Vowel Models and Its Application in Text Independent Speaker Verification

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Abstract

In text-independent speaker verification, we compare two sets of sentences with different text content for timbre similarity to determine if they came from the same speaker. Since the sentences are different, we may not have many matching words to compare. However, the sentences are constructed from the same set of phonemes of the language used, including vowels and consonants. Generally speaking, simple vowels are fewer in number, but are the more prominent parts of a sentence in terms of duration and loudness, very suitable to be used for timbre comparison. In this paper, we first built spectral models for 5 simple vowels in Mandarin Chinese. Then we applied the models to analyze two given sets of speech sentences, detecting the various simple vowels in the sentences, and used the detected vowels to build a timbre model for each speaker. After that, we are able to compare the two speaker models to determine if the two speakers are indeed the same person.

Keywords: text-independent, speaker model, speaker verification, spectrum normalization, vowel detection

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