

Documents

Khairuddin, S.^a, Ahmad, S.^a, Embong, A.H.^a, Hashim, N.N.W.N.^a, Hassan, S.S.^b

Features Identification and Classification of Alphabet (ro) in Leaning (Al-Inhiraf) and Repetition (Al-Takrir) Characteristics

(2019) *2019 IEEE International Conference on Automatic Control and Intelligent Systems, I2CACIS 2019 - Proceedings*, art. no. 8825067, pp. 295-299.

DOI: 10.1109/I2CACIS.2019.8825067

^a Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia

^b Centre for Languages and Pre-University, Academic Development, International Islamic University Malaysia, Kuala Lumpur, Malaysia

Abstract

It is important for Muslim to recite the Quran properly with the correct Tajweed. which includes the use of correct characteristics (sifaat) and point of articulations (makhraj). To this date, there are limited researches done focusing on classifying the Quranic letters according to the characteristics. In this study, the focus is given to the classification of the characteristics of the Quranic letters for the purpose of developing an automated self-learning system for supporting the conventional method of Quranic teaching and learning. The characteristics of Quranic letters, which are the focus in this paper are Leaning and Repeating, where both consists of (ro) alphabet. Several methods of feature extractions and analysis were implemented such as Formant Analysis, Power Spectral Density (PSD), and Mel Frequency Cepstral Coefficient (MFCC) to come out with the suitable features that best represent the correct characteristics of the alphabet. Once the features had been identified, Linear Discriminant Analysis (LDA) and Quadratic Discriminant Analysis (QDA) were used as the classifier. The results show that QDA with all 19 features trained achieved the highest percentage accuracy for both Leaning (Al-Inhiraf) and Repetition (Al-Takrir) characteristics with of 82.1% and 95.8% of accuracy respectively. © 2019 IEEE.

Author Keywords

Formant; Linear Discriminant Analysis; MFCC; Power Spectral Density; Quadratic Discriminant Analysis

Index Keywords

Automation, Discriminant analysis, Intelligent systems, Power spectral density, Process control, Spectral density; Features identification, Formant, Linear discriminant analysis, Mel-frequency cepstral coefficients, MFCC, Power spectral densities (PSD), Quadratic discriminant analysis, Teaching and learning; Learning systems

Publisher: Institute of Electrical and Electronics Engineers Inc.

Conference name: 2019 IEEE International Conference on Automatic Control and Intelligent Systems, I2CACIS 2019

Conference date: 29 June 2019 through 29 June 2019

Conference code: 151780

ISBN: 9781728107844

Language of Original Document: English

Abbreviated Source Title: IEEE Int. Conf. Autom. Control Intell. Syst., I2CACIS - Proc. 2-s2.0-85072931653

Document Type: Conference Paper

Publication Stage: Final

Source: Scopus