Universiti Teknologi MARA

Measuring Customer Satisfaction Through Speech Using Valence Arousal Approach

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STUDENT'S DECLARATION

I certify that this report and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Call centers deal with numerous customers each day. When customers are happy they are regarded as satisfied and when they are angry and sad, they are regarded as dissatisfied. In order to determine the customer satisfaction level, this project used valence and arousal method as many researchers concur that emotion has at least two primitives of valence and arousal. There are several problems that motivates the development of this project, namely: measuring customer satisfaction using speech is yet to be developed, lack of empirical study on valence arousal method for speech and there is still no standard approach on speech emotion recognition. Based on literature review, Mel-Frequency Cepstral Coefficient (MFCC) is used for feature extraction and Adaptive Neuro Fuzzy Inference System (ANFIS) with subtractive clustering is employed for classification. This project used Agile methodology which consists of 5 phase namely: requirement, design, implementation, testing and documentation. The output are measured using two dimensional emotional classification which consist of valence and arousal. The performance of the valence and arousal method are measured using two type of thresholds. The first threshold is breaking into three equal part with following threshold values for both valence and arousal: 0.67, 0.67 and 0.66. The second threshold is breaking into 3 part with different threshold values of 0.75, 0.5 and 0.75. Experimental result shows that recognition rate for measuring satisfaction is 40.4% and neutral emotion obtained the highest recognition with 57.8% on the first threshold. This analysis may help in understanding the satisfaction and dissatisfaction of customers based on speech and the accuracy performance of the proposed method can be improved.

Keywords: Customer Satisfaction, Adaptive Neuro Fuzzy Inference System (ANFIS), Mel-Frequency Cepstral Coefficient (MFCC), Valence Arousal, Subtractive Clustering

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