

Report

Period: Nov. 14 - Nov 20, 2014

Task: Simulating and estimating multimodal emotion recognition using different multimodal emotion databases

Subtasks: SVM training and classification, Performing simple actions on NAO, Analyzing facial and vocal data

1 Task 1

I have written a paper in which proposes a new method for multiclass classification of vocal emotion recognition system using multiclass SVM with nine different feature pairs, namely pitch and intensity, pitch and first bandwidth, pitch and second formant, pitch and third formant, pitch and fourth formant, pitch and noise-to-harmonics ratio, pitch and standard deviation, intensity and second formant, intensity and mean autocorrelation. In this research multiclass SVM is trained by using each of above mentioned feature pairs and the final vocal emotion recognition was done by applying majority voting algorithm to all decisions received from different feature pairs. The experiments were done using SAVEE database which seven basic emotions, such as 'happy', 'sad', 'angry', 'disgust', 'fear', 'neutral' and 'surprise'. Based on this method the overall recognition accuracy of the vocal recognition system is 78.3%, which is 4.49% higher than binary tree based vocal emotion recognition. The leave one sample out cross validation table showing the vocal emotion recognition results of the new method where shown in Table. 1.

Table 1. Leave one sample out cross validation table for multiclass SVM classifier

	H	S	A	D	F	N	Su	Recognition Rate (%)
H	46	14	0	0	0	0	0	76.7
S	14	45	0	1	0	0	0	75
A	8	0	52	0	0	0	0	86.7
D	4	0	4	49	3	0	0	81.7
F	1	17	6	0	36	0	0	60
N	0	7	1	0	0	52	0	86.7
Su	0	8	3	0	0	0	49	81.7
Recognition Accuracy (%)	63	49.5	78.8	98	92.3	100	100	78.3

Tasks for the Next Week

1. I am planning to estimate the vocal emotion recognition accuracy by using data fusion techniques such as mean rule, and weighted sum rule.
2. Analyse facial emotion recognition techniques and algorithms