

Assistive Real-Time Technology in Singing

Project Meeting

January 19, 2013

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Assistive Real-Time Technology in Singing

Summary

1. Objectives of task 4 and 6
2. Steps so far
3. Next Steps

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1. Objectives of task 4 and 6

Task 4

Correlation between objective acoustic features of the singing voice and voice disorders in singing

Goals

Identify in recent literature what singing disorders are typical

Associate perceptual classification parameters to common voice disorders

Investigate what acoustic features are correlated with voice disorders

Needs

Databases of both singing and spoken voices, healthy or exhibiting voice disorders

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1. Objectives of task 4 and 6

Task 6

Real-time preventive assessment of the singing voice

Goals

Improve the SingingStudio software (extention of Task 2)

Allow singers to monitor their singing voice in real-time with the purpose to detect stress or overload manifestations

Extract from running singing (and not only from sustained vowels) meaningful acoustic features

Needs

Validation work that involves researchers from FEUP and FMUP

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2. Steps so far

1. Announcement
2. Pre-testing of the protocols
3. Recruitment of singers
4. Self-assessment inquiries
5. Recording voice samples
6. Feedback
7. Segmentation of voice records

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2. Steps so far

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2. Steps so far

Announcement:

- Singing networks
- Flyers
- E-mail
- Other channels

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2. Steps so far

Pre-testing of the protocols:

- Singing students from Universidade Católica Portuguesa
- Written informed consent & self-assessment inquiry

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2. Steps so far

Recruitment of 18 singers:

- No preview selection
- Contact by e-mail
- Different styles (lyrical, popular, rock and jazz)

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2. Steps so far

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2. Steps so far

Self-assessment inquiries:

- Singing experience
- Self-perception (voice quality, voice symptoms)
- Specific voice problems (last 12 months)
- General health
- Vocal health

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2. Steps so far

Recording voice samples:

- Sustained vowel /a/ (but, in current portuguese speech – Monday (...)

Saaaaturday)

- /a/ increasing volume
- /a/ increasing pitch
- “Happy Birthday” song
- Text reading (“The North Wind and the Sun”)

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2. Steps so far

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2. Steps so far

Feedback:

- Short conversation with the participant

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2. Steps so far

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2. Steps so far

Segmentation of voice records:

- Separate the voice records by vocal exercises
- Select the meaningful part in each one

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3. Next Steps (an overview)

Months	January - February	March - April	May - July
Phases	Database Analysis (1)	New Announcement and Recruitment(2)	Correlation of all Parameters (1+2)
Task 4	Complete applicable medical ethics procedures		
	To assist the ENT specialist medical diagnostics , in particular in examinations in view of the laryngeal complete characterization of the voice problems detected / reported either from the standpoint of organic or functional.		
	Construction and structuring of databases containing records of voices of volunteer singers showing changes or disturbances	Collaboration with members of the project team at Faculty of Engineering of University of Porto, in acoustic analysis of the voice samples with the aim to identifying acoustic features with correspondence with vocal alterations.	
Task 6	Assist in the development of computational procedures capable of performing continuous monitoring of speech signals or singing in a preventive perspective, using appropriate characteristics of the signals to detect the occurrence of effort regimes in the use of spoken or sung voice and that can lead to vocal disorders.		
	Assist in evaluating the performance of computational procedures for real-time continuous monitoring spoken voice or singing, for the purpose of detecting and signaling occurrences of effort or stress on the use of voice		
	Regular monitoring and reporting of the evolution of vocal health of the volunteer singers participating in the study		

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2. Next steps

- ▶ Ethic committee meeting on January 25th 2013, hopefully will authorize the medical procedures of the study (laryngeal analysis);
- ▶ Medical exams to complete the voice evaluation of the first volunteers group (task 4);
- ▶ Pre and pos vocal treatment analysis (task 6);
- ▶ New announcement and recruitment (2nd group);
- ▶ Correlation of all parameters.

Thanks for you attention!