

API2010: Vocal Tract Workshop

February 11th 2010

Introduction

This workshop is using software developed by P. Birkholz available through his website on the Vocal Tract Lab (see <http://www.vocaltractlab.de/>). We will use the predecessor *TractSynth* (2004) of *VocalTractLab* (2007) to illustrate and study several issues concerning articulatory speech synthesis. This approach was also used in his work on *Articulatory Synthesis of Singing* that obtained 2nd place at the *Synthesis of Singing* Challenge of Interspeech 2007.

Preparations:

- Download the *TractSyn* zip-file from the website <http://www.vocaltractlab.de/> and unzip it in a local directory of a MS Windows machine. You can find this file under the <Free download>-section of *VocalTractLab*. Furthermore, download the *TractSyn* manual using the link in the same paragraph you found the *TractSyn* zip-file in.
- Read the *TractSyn* manual carefully to get acquainted with the available <Views> and working of the program:
 - You can load example vocal tract parameters for the vowels ‘a’, ‘e’, and ‘u’. These can be played and modified in the *Vocal Tract View* (amongst others).
 - In the *Segmental Control Model View* several phones can be concatenated and played in sequence. You can load a phone chain example <mandy.phc> and animate and play it in this view. By right clicking in the area where the control point traces are depicted, a drop down menu appears that enables you to <Make new connections> for the necessary new intermediate controls.
 - ...
- Finally, read reference [3] of the manual: P. Birkholz, D. Jackel. *A Three-Dimensional Model of the Vocal Tract for Speech Synthesis*. In Proceedings of the 15th International Congress of Phonetic Sciences, pp. 2597-2600, Barcelona, Spain, 2003. Please note that this article is also available in the reference section of the *VocalTractLab* website.

Assignment

- a) Use the Articulatory Speech Synthesizer *TractSyn* to produce and save at least two new phones as two ‘vocal tract parameters’- file <phone01.vtp> and <phone02.vtp>.
- b) Modify <mandy.phc> in such a way that a phone chain is produced that synthesizes the word ‘mammy’. Save this phone chain as <mammy.phc>.

Each student has to make this assignment by her-, him-self. Mail your new phones and phone-chain as attachments to erwin@liacs.nl before next class on February 18th 2010.