Vocal Tract Workshop

Audio Processing and Indexing 2023
September 12th 2023

Introduction

This workshop will make use of the Vocal Tract Lab software developed by P. Birkholz (see http://www.vocaltractlab.de/). We will use the latest (non 3D) version of ***Vocal Tract Lab 2.3*** (VTL 2.3, August 2020) to illustrate and study several issues concerning articulatory speech synthesis. Note that:

- An earlier version of this software was also used in his work on *Articulatory Synthesis of Singing* that obtained 2nd place at the *Synthesis of Singing* Challenge of Interspeech 2007. For this and other publications see the VocalTractLab-website.
- VTL 2.3 is developed for MS Windows and is open source under the GNU General Public License.

NB Contact me erwin@liacs.nl, if you encounter any problems running the VTL 2.3 software on your MS Windows machine (or Virtual MS Windows Machine).

Preparations:

- Download the ***Vocal Tract Lab 2.3*** (August 2020) and unzip it on any MS Windows machine (or Virtual MS Windows Machine). The new directory *<VTL23>* contains the Vocal Tract Lab software, sources, manual and examples.
- See Section 1.2 for further installation notes.
- Read Chapters 1, 2, 4 and 6 of the Vocal Tract Lab manual carefully, as they explain the workings and functionality of the software needed to complete this workshop.

Assignment

1. Follow the steps outlined in Chapter 7.3 of the manual to ***create a new vocal tract shape and save and submit it***. Use your imagination, or play/interact with https://dood.al/pinktrombone/ , explain your ideas behind your design.
2. Follow the steps outlined in Chapter 7.4 of the manual to create three vocal tract shapes using the vowel-x-outline.gif files included in the program directory. ***Save your shapes in separate files and submit them.***
3. Open one of the included gestural scores and edit that gestural score such that one or more of the words in the gestural score is different. A simple example would be changing the word “Sprachsynthese" to the word “Sprachsynthesie". ***Save your result as a new gestural score. Also submit a wav recording of your result.***
4. Give a gestural score for three words spoken with an emotional singing voice. Report the emotion you tried to express, and ***submit a wav recording of your result*** (give an appropriate name to the wav file).

Each student has to make this assignment individually. For each assignment submit your respective new speaker files, audio-wavs, and gestural scores, together with a brief but clear explanation (in a pdf document) of what you did, in a single .zip file using BrightSpace.

Do not forget to clearly state your name and student-number in the pdf. Due date: September 21st 2023.