**Comp. Assn 1: Virtual Reality with Convolution**

Note: *This assignment will be graded for 2 marks. You may submit in teams of 2 by mentioning who did what in your report. Submit a short report and a link to one of your generated output wav files.*

*Please write your own from-scratch code for convolution and test it with a short segment of the given audio (0.5 s) and one of the short BRIR. You can use the fast library routines next for more experiments.*

*One extra (bonus) mark will be awarded to outstanding reports*. You may use Scilab or Python. **Due date: September 1, 2024.**

**Using Scilab:**

Windows users can download Scilab from the following link: http://www.scilab.org/

Ubuntu users can directly install Scilab from Software Center.

BRIR wav files as well as input source wav are provided in the rar file along with a Scilab skeleton code.

**The task:**

To convert mono audio recordings to spatial sound using selected binaural room impulse responses (BRIR) by implementing discrete-time convolution on sampled data.

The provided Scilab program 'generate\_reverb\_data.sce' provides the skeletal framework to generate stereo reverberated audio from clean audio and selected RIR. Please insert your convolution steps into this as instructed.

Inputs:

inp: single-channel audio recording (BheegiRegular.wav) (Use the shorter version for faster computation).

fs\_inp: sampling frequency of clean audio (16000 sample/s)

rir: two-channel RIR measured in different rooms (long hall, parking garage, five columns) (note: the ‘sampling rate’ of the rir should match that of the input signal).

Output:

out: two-channel (i.e. stereo) convolved signal

Note that convolution involves a huge amount of computation per output sample; so be patient while your code runs!