**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.*

*One extra (bonus) mark will be awarded to outstanding reports*. You may use Scilab or Python. **Due date: September 1, 2025.**

**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:**

1. Write from-scratch code for the Toy example and submit your code and output.
2. 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! A fast convolution function is the FFT-based ‘Convol’ in Scilab.