# AET 5410 Homework 1

## Digital Audio, Computer Programming, Signal Analysis

Due: September 23rd

## 1 EDITING AUDIO SIGNALS

One common task audio engineers perform is editing a signal. This might include splicing and trimming portions of a sound file.

The Digital Audio Workstation is a convenient tool for performing these types of edits using a graphical user interface. In this homework problem, you will implement some editing tasks by writing code in Matlab.

Specifically, you will write the code to separate several portions of an audio file. Then, you will combine those portions together to form a new signal based on the specifications provided.

For this problem, you first need to make a recording of the audio signal to use. You will not be graded on the quality of the recording, so don't make that part too complicated. You will submit the original recording as part of your homework. Please record yourself saying the letters of the alphabet. For simplicity in MATLAB, use a mono recording.

### 1.1 PROBLEM

Create and save a script (m-file) in MATLAB that performs the following steps:

- Import the sound file of the recorded alphabet
- Use array indexing to separate the individual letters of your initials (e.g. E, W, T)

- Store these signals as separate variables
- Combine the letters together sequentially in the order of your initials
- Use a loop to concatenate your initials together multiple times (e.g. EWTEWTEWT)
  - Include a variable at the top of your script to set the number of times the initials should be concatenated
- Append one final signal at the end of the sequence where the audio of the initials is time-reversed
- Execute the *sound* function to listen to the new signal
- Export/save the new variable to a sound file
  - Name the file: 'audioEdits.wav'
- Plot the waveform for the completed signal

Remember to add comments to your code to explain what each command is accomplishing.

## 2 SUBMISSION

To submit your homework, create a single zip file that contains the MATLAB m-file script and the sound files you created and used in the problem. Name the zip file: xxxxx_AE5410_HW1.zip, where *xxxxx* is your last name. Email the zip file to: eric.tarr@belmont.edu before the start of class on September 23rd.