ECE-448: Speech Signal Processing -- Monsoon 2018

Assignment 1
DEADLINE: Before 11.59PM on 13 Aug 2018

INSTRUCTIONS:
1. You may do the assignment using wavesurfer (preferable) or audacity.
2. You need to upload a single pdf file in the moodle. The file should contain your answers which may include screenshots, text etc.
3. At the top-right of the first page of your submission, include the assignment number, your name and roll number.
4. IMPORTANT: Make sure that the assignment that you submit is your own work. Do not copy any part from any source including your friends, seniors or the internet. Any breach of this rule could result in serious actions including an F grade in the course.
5. Your grade will depend on the correctness of answers. In addition, due consideration will be given to the clarity and details of your answers.

Note: Wavesurfer is available in the following link:
https://sourceforge.net/projects/wavesurfer/?source=typ_redirect

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Questions:

1. Record your full name and save it as yourname.wav file. By observing the speech waveform of the recorded utterance transcribe the following:

- **Phonemes**
- **Voice/Non-Voice decisions**
- **Manner of Articulation (MoA) for consonants, High/Low for vowels**
- **Place of Articulation (PoA) for consonants, Front/Mid/Back for vowels**

(For this question you need to submit wav file along with lab files that contain respective transcriptions. In pdf file create a table that has all the above information in a corresponding manner.)

2. Consider any vowel region in the waveform recorded above. Select a segment inside the vowel region that is quasi-periodic. From the segment calculate pitch period (explain clearly how it is done). Do this exercise at three different vowel regions in the waveform. Report pitch periods. What are your observations?

3. Record any two VCV (vowel-consonant-vowel) nonsensical utterances of your choice for each of the following cases:

- **MoA is same, PoA is different**
- **PoA is same, MoA is different By observing the acoustic waveform, write your comments.**

4. Explain the following terms briefly in a few lines:

- **Coarticulation**
- **Phonation**
- **Fundamental Frequency**
- **Epochs**
- **Formants**