Program Assignment #1

- Due Date: Nov. 13 (Wed) 18:00
- Submission: Source code & text file that explain how to run your algorithm

Count the total number of syllables in a word.

1. Database

   This database is a subset of Korean phonetically balanced words (PBW) and consists of words uttered in 3, 4 and 5 Korean syllables. All samples are uttered by female speakers. For details, please refer to the appendix.

   - File format: wav file (Sample rate: 16000Hz)
   - The label of samples corresponds to the number of syllables in a word.
     - 3 syllables in a word ⇔ label: 3
     - 4 syllables in a word ⇔ label: 4
     - 5 syllables in a word ⇔ label: 5
   - Training data: 300 samples
     - 100 samples x 3 labels = 10 words x 10 styles x 3 labels
     - Each of 10 words is uttered by different 10 speakers.
   - Test data: 75 samples
     - 25 samples x 3 labels = 5 words x 5 styles x 3 labels
     - Each of 5 words is uttered by different 5 speakers.
     - This test data is provided to verify the performance of your implemented algorithms. It is not used in actual grading.
   - Test data for TA: 75 samples
     - 25 samples x 3 labels = 5 words x 5 styles x 3 labels
     - Each of 5 words is uttered by different 5 speakers.
     - This test data is not provided because it will be used in your grading.
     - The words of test data are different from those of training data and your test data.

2. Feature extraction ('feature_extraction' function)

   You can use temporal features (time domain features) such as the energy of signal, or/and the zero-crossing rate, etc. (Cannot use spectral features such as spectrum)

3. Classification ('classify' function)

   Implement your own classification algorithm to count the total number of syllables in words using your own features. You can use only the tools up to Chapter 3 in the textbook.

   In this function, train your classifier using training data and check the performance of your algorithm with test set. Submit the highest performance algorithm (source code) of your own coding.

<Precautions>

1. File name: ID_name.zip (Source code and text file that explain how to run your algorithm should be compressed in zip format) → **Submit on KLMS**
   예) 20190000_HeejinChoi.zip
2. **Your source code must include 'feature_extraction' and 'classify' functions.**
3. Submit only one of the best-performing algorithms.
   - ✓ It is impossible to output the best performance after testing with various algorithms in 'classify' function.
4. Implement your algorithm using python or matlab.
   A. You cannot use matlab toolbox or python external packages.
5. TA will evaluate final performance of your algorithms using the test data that is not provided.
6. **Scoring method: Evaluate the error rate using TA's test data by running your implemented 'classify' function.**
   A. PA1 score = 100 – (Performance rank X 1 – 1)
      - ✓ ex) First place: 100 points / Second place: 99 points / Third place: 98 points / …

Good Luck!

Appendix - Database

The number of syllables	Training set	Test set
3 syllables in a word (label: 3)	청와대(cheong-wa-dae)	당뇨병(dang-nyo-byeong)
	컴퓨터(com-pu-ter)	
	위대한(wi-dae-han)	뭐라고(mwo-ra-go)
	예컨대(ye-keon-dae)	
	요컨대(yo-keon-dae)	누워서(nu-wo-seo)
	되풀이(doe-pur-i)	
	왔지만(wat-ji-man)	특혜를(tuek-hye-reul)
	명예를(myeong-ye-reul)	
	계열사(gye-yeol-sa)	소외된(so-oe-doen)
	놓치지(noh-chi-ji)	
4 syllables in a word (label: 4)	그야말로(geu-ya-mal-lo)	그쪽으로(geu-jjog-eu-ro)
	분야에서(bun-ya-e-seo)	
	됐습니다(dwaet-seup-ni-da)	선행돼야(seon-haeng-dwae-ya)
	뒤따라야(dwi-tta-ra-ya)	
	계획하고(gye-hoek-ha-go)	납품대금(nap-pum-dae-geum)
	임진왜란(im-jin-wae-ran)	
	뒷받침해(dwit-bat-chim-hae)	분석됐다(bun-seok-dwaet-da)
	규제완화(gyu-je-wan-hwa)	
	좌우하는(jwa-u-ha-neun)	위태롭게(wi-tae-rop-ge)
	하였지만(ha-yeot-ji-man)	
5 syllables in a word (label: 5)	두려워하지(du-ryeo-wo-ha-ji)	범위내에서(beom-wi-nae-e-seo)
	정계은퇴를(jeong-gye-eun-toe-reul)	
	최고회의는(choe-go-hoe-ui-neun)	효과적으로(hyo-gwa-jeog-eu-ro)
	무역대표부(mu-yeok-dae-pyo-bu)	
	어떻습니까(eo-tteoh-seup-ni-kka)	얘기입니다(yae-gi-ip-ni-da)
	무엇보다도(mu-eot-bo-da-do)	
	멀티미디어(mul-ti-me-di-a)	금융실명제(geum-yung-sil-myeong-je)
	국민투표를(guk-min-tu-pyo-reul)	
	우리사회의(u-ri-sa-hoe-ui)	않겠습니까(an-get-seup-ni-kka)
	위로부터의(wi-ro-bu-teo-ui)	
Total # of samples	**30 words * 10 = 300 samples**	**15 words * 5 = 75 samples**