

EEE 6110 Speech Processing - Homework 1

1. Using the description of the Kiswahili alphabet in

Ngugi, K., Okelo-Odongo, W., & Wagacha, P. W. (2005). Swahili text-to-speech system. *African Journal of Science and Technology*, 6(1),

record examples of Kiswahili words with the sounds described there and group them into vowels, consonants (plosives, nasals, fricatives, retroflex liquid, lateral liquid, glide) and digraphs. For each class, submit an audio recording saved in the following format `Your_Name_class_word.wav`. Also, provide an annotated spectrogram as a jpeg clearly showing the location of the sound. Include all code used in form of a Jupyter notebook.

2. Using the expressions for energy and zero crossing rate in Rabiner,

L. R., & Schafer, R. W. (2007). Introduction to digital speech processing. *Foundations and Trends in Signal Processing*, 1(12), 1-194,

write code to implement these functions and compare the output of your implementation to the output obtained using `librosa`. Submit all code used in form of a Jupyter notebook.