**Assignment 1: Speech and not-speech detection**

DDL：2017-10-17 Tue.

（1）This assignment is carried out by group. You could choose your teammate freely. Each group consists of at most 3 students.

（2）The ‘training.data’ contains the training data. It is from our project to detect whether a person in a video speaks or not. The features are generated in the following way, which may help you making the most of these features.

1、Get the mouth region M from the origin image based on facial landmark detection.

2、Calculate dense optic flow between mouth region of last frame and the current frame and generate a score S that depicts the motion of mouth.

3、Calculate the parameter V which depicts the degree of mouth opening.

4、For frame i, we also calculate the S and V for its previous and next frames.

5、Hence, we generate a *6* dimensional feature vector is X=[Si-1 Si Si+1 Vi-1 Vi Vi+1].

6、The label is at the end of each line, where +1 represents speaking, and -1 represents not-speaking.

In the training.data, the ratio of positive examples over negative examples is 1:1. Keep this in mind, for if you find your training error or validation error is larger than 50%, that means your solution learns nothing and performs worse than guessing.

（4）You need to write a program to predict speaking or not speaking.

For convenience to evaluate your grogram, please use this name for your matlab main function:

speakingDetection.m

Note about the interface in your function ‘speakingDetection.m’, it should be:

function predY= speakingDetection (X)

X: The input feature vectors, which is an N\*6 matrix, where N is the number of feature vectors.

predY: The output vector to predict labels of X, which is a N\*1 vector, and predY(i) = 1 or -1.

Besides MATLAB, you also use Python, as long as you hold the interface protocol above. Note we don’t recommend C/C++.

（5）You can use ANY method to solve this problem.