GMM

Data Structure:

In GMM.py, we use the result from K means to calculate the initial mean, amplitude and covariance. Using these parameters in function Maximization as input to calculate gamma. Then, using the gamma as input parameter in function Expectation to calculate the mean, amplitude and covariance for the next run. Repeating these two steps until the parameters converge.

We converts the input data from list to array so that it is easier calculate with NumPy.

Challenge:

The concept of GMM is not difficult; however, there are lots of symbols so that it takes some time to understand the complex equations. Undoubtedly, it also takes lots of time to think about how to put these mathematical functions into practice. NumPy helps a lot with matrix calculations.

Result:

Part2:

sklearn.mixture.GMM

part3:

1. Speaker recognition

Extracting features such as pitch, amplitude and frequency from those speech signals, and using GMM to identify a person.

1. background subtraction

Using color and depth information to detect moving objects based on GMM, which is a popular method in computer vision.