3803ICT
Data Analytics

Lab 06 – Time Series

Trimester 1 - 2020

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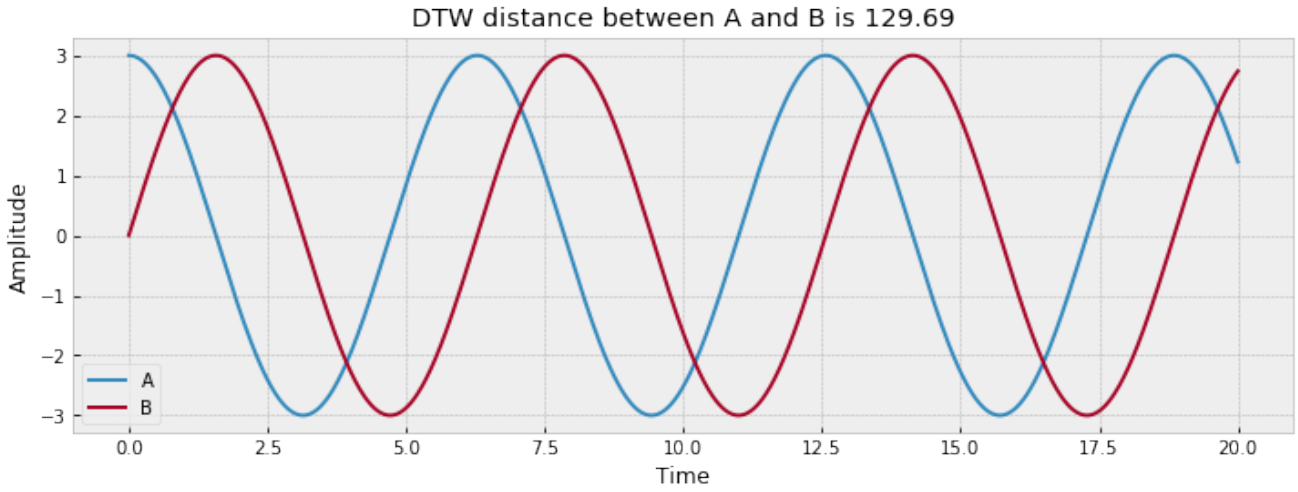
I. KNN and DTW

Finish TODO in jupyter notebook file for following tasks:

- Implement dtw_distance function to calculate distance between 2 time series by DTW.
- Test DTW with 2 time series. Eg: 3*cos(t) vs 3*sin(t)



- Implement dist_matrix to calculate distance between all the time series in array/list "x" with all the time series in array/list "y". Return matrix of distance between them.

```
[[11.67252849 11.23153308 11.18696516 10.10487689]
 [10.1579889  10.60562618  8.29507764  8.90213128]
 [11.29633455 10.421626   11.49198114 10.91217687]
 [10.93761384  9.42820397  9.41139733 16.14046695]]
```

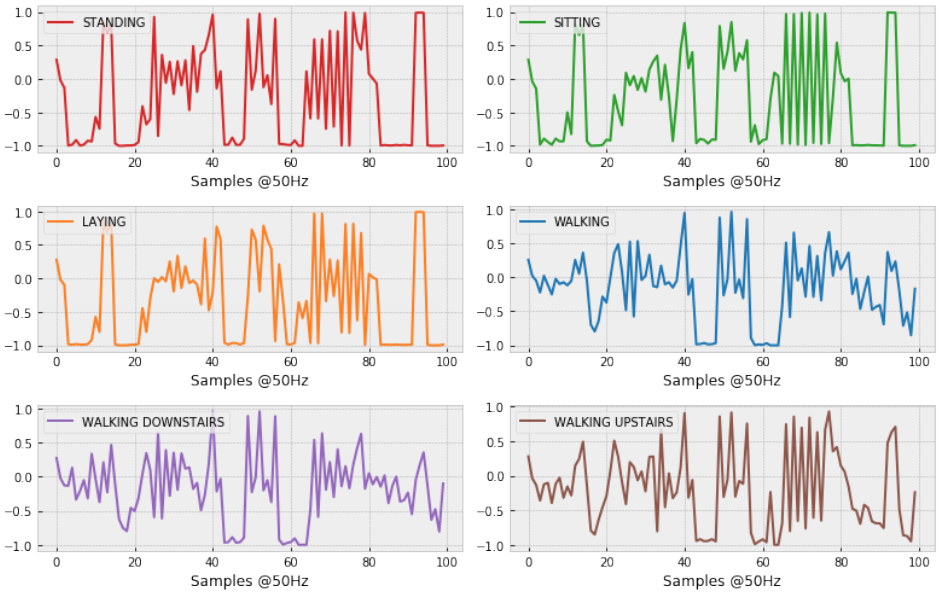
- Implement a classification using KNN.

II. Human Activity Recognition

You are provided training and testing data with their labels. Complete the following tasks:

- Visualize sample activities in plot with following labels:

  labels = {1:'WALKING', 2:'WALKING UPSTAIRS', 3:'WALKING DOWNSTAIRS',
  4:'SITTING', 5:'STANDING', 6:'LAYING'}



❖ Use KNN you implement above to train and test the provided data. Visualize your confusion matrix.