**INSTUCTIONS For Running GDTW Code**

**Time Series Classification:**

Code used for this experiment is in folder "1NN Classification Code"

Make sure all the files in this folder in are in working directory of Matlab.

1. To run GDTW\_Mink distance for all 85 datasets, run the file main\_mink.m in MATLAB, it will save the dataset name and error rate to a text file 'Mink\_distance.txt'. main\_mink.m contains the names of all datasets to run.

2. Run main\_manhatan.m for GDTW\_MD (GDTW Manhattan) distance. It will save the dataset name and error rate to a text file 'Manhatan\_distance.txt'

3. Run main\_ucr\_euclidean.m for DTW\_ED (DTW Euclidean) distance. It will save the dataset name and error rate to a text file 'Euclidean\_distance.txt'

Rest of the experiments (**Best Match Retrieval, Cardinality of Warping, Sensitivity to Local Distortion**) from section 5 use the code in folder “GDTW\_Experiments”

1. Open project GDTWCode.pro

2. Run the project

3. Enter dataset filename with full path and press Enter, e.g. if ItalyPower.txt is in path C:\ItalyPowerN.txt (after copying this path press enter)

4. Type N (i.e number of time series for example 67 for ItalyPower), press Enter key

5. Type L, (Length of time series, for example 24 for ItalyPower) press Enter key

6. Type the path of file where cost matrix for GDTW is to be written. The file will be created in the path specified. e.g C:\matrix.txt

To find GDTW BETWEEN PAIR OF SEQUENCES

7. Press 1 to find GDTW between 2 sequences, press Enter key

8. Enter first sequence id (i.e if first sequence Is TS0[1,23], type 0, press Enter key

9. Type start of first sequence (1 for TS0[1,23]), Press Enter key.

10. Type end of first sequence (23 for TS0[1,23]), Press Enter key.

11. Repeat steps 8,9 and 10 for 2nd sequence.

12. Enter distance metric,0 for Euclidean, 1 for taxicab, 2 for Minkowski, 3 for DTW\_ED, 4 for GDTW\_MD and 5 for GDTW\_Mink (press Enter)

13. Record distance returned.

14. For 2nd pair of sequences repeat steps from 7 to 13.

Record the distance computed between the pair of sequences

For Finding the best match for a given query sequence USING GDTW DISTANCES

15. Press 2 at step 7.

16. Enter 1 to load query from dataset

16.1 Enter Time series id, press Enter

16.2 Enter start of query sequence

16.3 Enter end of query sequence

16.4 Enter distance metric

17. Enter 2 to load query from file. Press Enter.

17.1 Enter path of query file. Press Enter

17.2 Enter length of query sequence. Press Enter

17.3. Enter distance metric

18. Record the distance, sequence returned as best match, warp count in case of GDTW distances

**Hierarchical Clustering Experiment**

Code used for this experiment is in folder "Clustering Code"

Make sure all the files in this folder are in working directory of Matlab.

Run agglomerativeC.m file. Input file containing the sequences must be delimited by space and should have .txt extension.

Enter the name of the file in the variable “filename”

Code will generate the dendogram for the distance used and will display which sequences are clustered at each level.