REPORT-3

funHDDC with Fourier Basis

Threshold	Initializer	CCR
0.001	Kmeans	0.675
0.01		0.755
0.05		0.7
0.1		0.76
0.2		0.76
0.3		0.595
0.4		0.71
0.001	Random	0.84
0.01		0.83
0.05		0.825
0.1		0.805
0.2		0.79
0.3		0.79
0.4		0.78

The funHDDC algorithm was run on the ECG data converted into a functional data object using a Fourier basis. The parameters were varied according to the table and the CCR for each configuration was recorded. The best model was chosen automatically using the BIC metric. The highest CCR was obtained with the “Threshold” set to 0.01 and the “Initializer” set to “Random”. This configuration was able to achieve a CCR of 0.84 on the data. The total number of misclassified labels are 32. This data has a total of 22 outliers from both classes. The number of outliers that are misclassified is 4.

funHDDC with Bspline Basis

Threshold	Initializer	CCR
0.001	Kmeans	0.745
0.01		0.74
0.05		0.745
0.1		0.76
0.2		0.655
0.3		0.69
0.4		0.755
0.001	Random	0.71
0.01		0.705
0.05		0.73
0.1		0.71
0.2		0.635
0.3		0.735
0.4		0.54

The funHDDC algorithm was run on the ECG data converted into a functional data object using a Bspline basis. The parameters were varied according to the table and the CCR for each configuration was recorded. The best model was chosen automatically using the BIC metric. The highest CCR was obtained with the “Threshold” set to 0.1 and the “Initializer” set to “Kmeans”. This configuration was able to achieve a CCR of 0.76 on the data. The total number of misclassified labels are 48. This data has a total of 5 outliers from both classes. The number of outliers that are misclassified is 0.

tfunHDDC with Fourier Basis

Threshold	Initializer	Dfupdate	Dconstr	CCR
0.001	Kmeans	Numeric	Yes	0.755
0.01				0.76
0.05				0.735
0.1				0.75
0.2				0.75
0.3				0.755
0.4				0.755
0.001	Random			0.795
0.01				0.795
0.05				0.795
0.1				0.855
0.2				0.77
0.3				0.8
0.4				0.785
0.001	Kmeans	Approx		0.755
0.01				0.76
0.05				0.735
0.1				0.75
0.2				0.75
0.3				0.755
0.4				0.755

0.001	Random			0.795
0.01				0.795
0.05				0.795
0.1				0.855
0.2				0.77
0.3				0.8
0.4				0.785
0.001	Kmeans	Numeric	No	0.755
0.01				0.745
0.05				0.73
0.1				0.75
0.2				0.75
0.3				0.755
0.4				0.755
0.001	Random			0.705
0.01				0.835
0.05				0.725
0.1				0.81
0.2				0.77
0.3				0.8
0.4				0.785
0.001	Kmeans	Approx		0.755
0.01				0.75
0.05				0.735
0.1				0.75

0.2				0.75
0.3				0.755
0.4				0.755
0.001	Random			0.7
0.01				0.75
0.05				0.735
0.1				0.735
0.2				0.77
0.3				0.79
0.4				0.76

The tfunHDDC algorithm was run on the ECG data converted into a functional data object using a Fourier basis. The parameters were varied according to the table and the CCR for each configuration was recorded. The best model was chosen automatically using the BIC metric. The highest CCR was obtained with the “Threshold” set to 0.1, the “Initializer” set to “random”, the “Dfupdate” set to “approx” and the “Dconstr” set to “yes”. This configuration was able to achieve a CCR of 0.855 on the data. The total number of misclassified labels are 29. This data has a total of 22 outliers from both classes. The number of outliers that are misclassified is 0.

tfunHDDC with Bspline Basis

Threshold	Initializer	Dfupdate	Dconstr	CCR
0.001	Kmeans	Numeric	Yes	0.745
0.01				0.715
0.05				0.765
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Random			0.785
0.01				0.745
0.05				0.69
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Kmeans	Approx		0.745
0.01				0.715
0.05				0.765
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Random			0.785
0.01				0.745

0.05				0.69
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Kmeans	Numeric	No	0.745
0.01				0.715
0.05				0.735
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Random			0.785
0.01				0.745
0.05				0.69
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765
0.001	Kmeans	Approx		0.745
0.01				0.715
0.05				0.765
0.1				0.715
0.2				0.765

0.3				0.765
0.4				0.765
0.001	Random			0.785
0.01				0.745
0.05				0.69
0.1				0.765
0.2				0.765
0.3				0.765
0.4				0.765

The tfunHDDC algorithm was run on the ECG data converted into a functional data object using a Bspline basis. The parameters were varied according to the table and the CCR for each configuration was recorded. The best model was chosen automatically using the BIC metric. The highest CCR was obtained with various configurations. One interesting fact is that no matter the values of the “Dfupdate” and “Dconstr” parameters, if the “Initializer” is set to “random” and the “Threshold” is set to 0.001 the model is able to achieve the highest CCR. These are highlighted in the table above. These configurations were able to achieve a CCR of 0.785 on the data. The total number of misclassified labels are 43. This data has a total of 5 outliers from both classes. The number of outliers that are misclassified is 0.