Pseudo codes

1. Consider input data X of N by P, where each row consists vectorized connectivity matrix;
2. r-split X (row-wise) into r groups, X_1, …, X_r;
3. Break each X_i into training and testing parts; denoted as X_i_train and X_i_test;
4. Run clustering algorithm on X_i_train and X_i_test, and obtain labels Y_i_train, and Y_i_test. Also obtain a classifier (e.g. in our case we used K-medoids and SVM) from (X_i_train, Y_i_train), test it on X_i_test, and obtain Y_i_classified.
5. Calculate the minimal (permuted) distance, d_i, between (Y_i_test, Y_i_classified).
6. Repeat 3-5 for every X_i and obtain d_1, …, d_r. Average them to get S_1.
7. Repeat 3-5 (but instead of using a classifier, we use random labeling with 1/k probability). Obtain S_2.
8. Compute S_1/S_2 as the estimated stability of the clustering algorithm (for each k) in relation to random labeling.
9. Plot S_1/S_2 for each k = 1, 2,…,k.