

Program for ROOTCLUS (Bocci & Vicari, 2019)

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Folder ROOTCLUS_Code.zip contains the following files:

ROOTCLUS.m
ROOTCLUS_main.m
SportData_Gender.m
SportData_Gender.mat
SportData.m
SportData.mat
PseudoF_ROOT_appl.m

Programs have been written for Matlab R2017b.

ROOTCLUS.m initializes the starting parameters and calls ROOTCLUS_main.m which contains the main code for the ROOTCLUS algorithm.

In order to run, ROOTCLUS requires

- the data three-way matrix S of size $(N \times N \times H)$

and the following parameters need to be set:

- J : number of clusters of objects ($J \leq N$)
- λ : (1 x nlambda) vector of λ values
- $start$: starting points flag (0 = random; 1 = current values for P, Mh, W, ch)
If $start=1$, then starting matrices P_0 , Mh_0 , W_0 and $Cost_0 = [(H \times 1)$ vector of the constants] must be provided by the user
- $nstart$: number of random starts
- $offdiag$: offdiagonal flag (0 = including diagonal entries; 1 = only offdiagonal entries)

A) File SportData_Gender.m contains the illustrative application data of Section 2 (the dataset is loaded from the mat file SportData_Gender.mat) and the required input parameters.

B) File SportData.m contains the Sport Data analyzed in Section 6.2 of the paper (the dataset is loaded from the mat file SportData.mat) and the required input parameters.

The user can modify appropriately the corresponding lines according to specific requirements.

C) File PseudoF_ROOT_appl.m computes the SS Decomposition and the pF Index (Section 4.1 of the paper) for the optimal solutions from the ROOTCLUS model.

The user may either save the workspace from the ROOTCLUS.m program as OptSol.mat file or modify appropriately the load command line.

For algorithmical and theoretical details please refer to:

Bocci, L., Vicari, D., ROOTCLUS: searching for “ROOT CLUSTers” in three-way proximity data”, 2019.

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