

%% FDRK guide

Name: FDRK
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(1) INTRODUCTION

FDRK as an ensemble classifier is Forest of Decision trees with RBF networks and Knowledge transferring. It firstly, clusters the features by using a feature clustering approach into accurate and non-redundant clusters by using a genetic algorithm approach. Then by feeding each feature cluster to the root node of a decision tree, a forest will be achieved, in which each node of decision tree contains RBF network to train and partition the local training set. In addition, the knowledge transferring is done in RBF synaptic weights of father nodes to the child nodes. Finally, the results are aggregated by a gating network. This classifier could deals with datasets with both 2-class and multi-class of datasets with low and high-dimensional features.

(2) REQUIRED SYSTEMS

-Matlab R2014a
-Weka 3.9.0

(3) PACKAGE FILES

The following Matlab files are included in the package.

FDRK.m	% The train and test procedure of FDRK is included.
Entropy.m	% The function to calculate Entropy of the root node of each tree
EntropyChild.m	% The function to compute the Entropy corresponding to child nodes.
CondXY.m	% Finds the conditional entropy among features(X,Y).
MutualInformation.m	% Computes the mutual information among features.
FeatureClustering.m	% The HFC function as a preprocessing, which found clusters of features.
FindNumofFeatures.m	% The function, which is used in FeatureClustering.mat to find the number of features, that needs to be assigned to each cluster.
RBF_func.m	% Finds the performance of RBF in each node.
PerformanceMeasure.m	%Returns the performance of FDRK in k-fold cross validation based on different measures including, True Positive, False Negative, STD, Accuracy, AUCarea, G-mean, F-measure, Precision and Recall.
Redundancy.m	% The function to find the redundancies among features.
Testgeneration.m	% The function to generate test dataset if it is required.

(4) INSTALLATION

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- All the files except FDRK.mat must be placed in Matlab root as they are functions.
 - Save the train and test file in Matlab format as OriginalData_Train.mat and OriginalData_Test.mat, respectively, in the root of FDRK.

- To do the same comparisons as Table 3, Table 4 and Table 5, please download the datasets, as what mentioned in corresponding references.
- To do comparison with ensemble methods, make test dataset by running Testgeneration.mat and run other ensemble methods in Weka 3.9.0.
- To make the same comparisons of other subsections, download the datasets from corresponding data repository and make test dataset by running Testgeneration.mat.

End of README.txt

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