Manual for the PyMVPA wrapper tool

Command:

fmriCmd.py dataset <filename>
samples <filename>
mask <filename>
classifier <name> <options>
[detrend [perchunk <value> model <name> polyord <value>]]
[zscore [perchunk <value> pervoxel <value> targetdtype <type>]]
[select <list>]
[crossvalidate { oddeven | {nfold <foldvalue> } | custom <list> }]
[searchlight <radius>]
[accuracy]
[save <filename>]

Details:

This is a tool which takes input options for running PyMVPA classifiers

Parameters:
##

dataset <filename> - mandatory parameter
- option to specify the dataset file (string)
- <filename> is the NifTI filename with .nii.gz extension

##

samples <filename> - mandatory parameter
- option to specify the attributes file (string)
- <filename> is the text filename with .txt extension

##

mask <filename> - mandatory parameter
- option to specify the mask file (string)
- <filename> is the NifTI filename with .nii.gz extension (or .img file)

##

classifier <name> <options> - mandatory parameter
- option to specify the classifier (string)

- <name> is the classifier name. It takes the following values and options.

Note: Options are specified per classifier. For more details on the options, refer to the PyMVPA manuals (http://pymvpa.org/modref.html#classifiers-and-errors)

<options> takes the following parameters as input:

smlr lm <value>
lm <value> - optional parameter
- lambda penatly value (float)
- default: 0.1

knn k <value> voting <method>
<value> - optional parameter
- k value (int)
- default: 2

voting <method> - optional parameter
- voting method (string)
- default: weighted

svm kernel <kernel_type>
kernel <kernel_type> - optional parameter
- type of the kernel (string)
- default: linear

blr sigma_noise <value>
sigma_noise <value> - optional parameter
- sigma noise (float)
- default: 1.0

enet lm <value>
lm <value> - optional parameter
- lambda value (float)
- default: 1.0

glmnet

LinearCSVMC - SVM implementation with linear kernel

gpr kernel <kernel_type>
<kernel_type> - optional parameter
- kernel type (kernel object)
- default: None

lars model_type <model>
model_type <model> - optional parameter
- model type (string)
- default: lasso

plr lm <value>
lm <value> - optional parameter
- lambda value (int)
- default: 1

ridgereg lm <value>
lm <value> - optional parameter
- lambda value (float)
- default: None

##

detrend [perchunk <value> model <name> polyord <value>]] - optional parameter (enabled by default)
perchunk <value> - optional paramter
- specifies whether data has to be handled in chunks (bool)
- default: True

model <name> - optional parameter
- name of the model (string)
- default: linear

polyord <value> - optional parameter
- order of the polynomial to remove from the data (int)
- default: 3

##

zscore [perchunk <value> pervoxel <value> targetdtype <type>]] - optional parameter (enabled by default)

perchunk <value> - optional parameter
- If perchunk is True samples within the same chunk are z-scored independent of samples from other chunks (bool)
- default: True

pervoxel <value> - optional parameter
- per voxel value (bool)
- default: True

targetdtype <type> - optional parameter
- specifies the target data type (string)
- default: float64

##

select <list> - optional parameter (disabled by default)

<list> - mandatory parameter
- specify the labels to be selected for training in the form of a Python list
- if select option is not specified, all labels will be selected by default

##

crossvalidate { oddeven | {nfold <foldvalue> } | custom <list>} - optional parameter (disabled by default)

oddeven - optional parameter
- odd even splitter (string)

nfold <foldvalue> - optional parameter
- specifies the number of folds in Nfold splitter (int)
- default: 1

custom <list> - optional parameter
- specifies the custom splitting of the data set
<list> - mandatory parameter to the option “custom”
- specifies the list of runs/chunks to be selected for splitting

##

searchlight <radius> - optional parameter (disabled by default)

<radius> - optional parameter
- specifies the searchlight radius (float)
- default: 4.0

##

accuracy - optional parameter (disabled by default)
- by default all the results return error value. In order to compute accuracy value, enable this option

save <filename> - optional parameter
- filename to save the result (string)

- default: a file with extension .nii.gz is generated by appending current date and time to the string "file". eg: file200911162120.nii.gz

##

Example:
python fmriCmd.py dataset data/bold.nii.gz samples data/attributes.txt mask data/mask.nii.gz classifier smlr select [1,2] crossvalidate oddeven