pyHIVE version 1.0.8

pyHIVE provides a rich parameters interface for researchers to modify. At the same time, in order to facilitate the use of the software, we provide a configuration file, and all the parameters need to be modified included in this file. Therefore, the researchers can easily use the software even if they are not familiar with coding. The configuration file consists of multiple small modules. The first line of each module is a comment with "#" at the beginning which gives the function of the module. The second line consists of the brackets and the name of the module. The rest are the parameters of this module. In addition to the main function module, the rest of the modules are encapsulated algorithms. The following are the default configuration of each module and it's specification.

Text in bold are the content from the configuration file

Parameter section of pyHIVE

[MAIN]
algorithm = ["HOG"]
explanation: The algorithms to extract features from images. choose one or more from   "HOG", "LBP", "GLCM", "HESSIAN", "CANNY".
example: ["HOG"], ["HOG","LBP"]

folder = "Img"
explanation: The folder of images, using relative path or absolute path. if using relative path, the folder should be put in the same path with main.py of PyHIVE
example: "Img", "/Users/ZRC/Desktop/imageAlgorithm/pyIFEL/Img"

image_size = None

explanation: the size(width, height) of image. if   None , all the images in the folder are treated as the same size of first image.
example: None, (100,100)

njob = 1
explanation: Number of CPU cores used for extracting features from images.
example: 1, 2

pca = True

explanation: Whether to use pca，True or False.

normalize = True
explanation: Whether   to normalize the features. True or False

image_format = ["jpg","png"]

explanation：The formats of images. set one or more formats
example: ["jpg"], ["jpg","png"]

save_format = ["pickle"]
explanation: The saving format , choose one or more from "csv","pickle","json","excel","txt".
example: ["csv"],["pickle"]

decimals = 10
explanation: if set n, all the value in feature matrix will be rounded to n decimal places.

[PCA]
n_components = None

explanation：Number of components to keep. if n_components is None , it means the smaller one between n_samples and n_features.
example: None, 500

[HOG]
orientations = 9
explanation: Number of orientation bins.

pixels_per_cell = (8, 8)
explanation: Size (in pixels) of a cell

cells_per_block = (3, 3)
explanation: Number of cells in each block

[**LBP**]
p = 24
explanation: Number of circularly symmetric neighbour set points (quantization of the angular space).

r = 8
explanation: Radius of circle (spatial resolution of the operator).

method = "uniform"
explanation: Method to determine the pattern, choose from 'ror', 'uniform', 'var'.

[GLCM]
block_num = 4
explanation: Number of blocks

distances = [1,2]
explanation: List of pixel pair distance offsets

angles = [0,np.pi/2]
explanation: List of pixel pair angles in radians

levels = 256
explanation: Number of grey-levels counted (typically 256 for an 8-bit image). The minimum is 0, The maximum value is 256.

normed = True
explanation: whether to normalize the matrix. True or False.

prop = "contrast"
explanation: The property of the GLCM to compute,   choose one from "contrast", "dissimilarity", "homogeneity", "energy", "correlation", "ASM".

[HESSIAN]
sigma= 1
explanation: Standard deviation used for the Gaussian kernel, which is used as weighting function for the auto-correlation matrix

[CANNY]
sigma = 3
explanation: Standard deviation of the Gaussian filter

low_threshold = None
explanation: Lower bound for hysteresis thresholding (linking edges). If None, low_threshold is set to 10% of dtype's max

high_threshold = None
explanation: Upper bound for hysteresis thresholding (linking edges). If None, high_threshold is set to 20% of dtype's max.

mask = None
explanation: Mask to limit the application of Canny to a certain area.