pycontour Documentation

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The documentation for pycontour is mainly organized by sub-modules.

- *User Documentation*
- *About pycontour*

CHAPTER 1

Representation Transform

1.1 swap_wh

def swap_wh(np_arr): “”” Swap row of width and row of height.

“”””

1.2 np_arr_to_point_list

def np_arr_to_point_list(np_arr): “”” Convert 2d numpy array to list of points.

“”””

1.3 point_list_to_np_arr

def point_list_to_np_arr(point_list): “”” Convert list of point coordinates to numpy 2d array.

“”””

1.4 cv_cnt_to_np_arr

def cv_cnt_to_np_arr(cv_cnt): “”” Convert cv2 contour to numpy 2d array ([0]-h, [1]-w).

“”””

1.5 np_arr_to_cv_cnt

def np_arr_to_cv_cnt(np_arr): “”” Convert numpy 2d array ([0]-h, [1]-w) to cv2 contour.

“”””

1.6 np_arr_to_poly

def np_arr_to_poly(np_arr): “”” Using numpy 2d array ([0]-h, [1]-w) to construct polygon.

“”””

1.7 point_list_to_poly

def point_list_to_poly(point_list): “”” Using point list to construct polygon.

“”””

1.8 bbox_to_poly

def bbox_to_poly(min_w, min_h, max_w, max_h): “”” Using bounding box to construct polygon.

“”””

1.9 poly_to_np_arr

def poly_to_np_arr(poly): “”” Convert shapely Polygon to numpy 2d array ([0]-h, [1]-w).

“”””

CHAPTER 2

Contour Transform

2.1 shift_cnt

def shift_cnt(np_arr, shift_h=None, shift_w=None):: “”” Shift the position of contour.

“”””

2.2 rotate_cnt

def rotate_cnt(np_arr, angle): “”” Rotate contour clockwise by radian angle around contour center

“”””

2.3 smooth_cnt

def smooth_cnt(np_arr, sigma=5): “”” Smooth the contour

“”””

CHAPTER 3

Contour

3.1 get_cnt_area

def get_cnt_area(cnt): “”” Calcualte the number of pixels contour covered.

“”””

3.2 get_cnt_aspect_ratio

def get_cnt_aspect_ratio(cnt): “”” Calcualte the aspect ratio of contour.

“”””

3.3 get_cnt_solidity

def get_cnt_solidity(cnt): “”” Calcualte the solidity of contour.

“”””

CHAPTER 4

Feature

4.1 ZernikeMoments

class ZernikeMoments: “”” Calculate Zernike moments for contour

“”””

CHAPTER 5

Polygon

5.1 poly_to_valid

def poly_to_valid(poly): “”” Adjust polygon to be valid if not.

“”””

5.2 get_poly_area

def get_poly_area(poly): “”” Calcualte the number of pixels the polygon covered.

“”””

5.3 get_poly_bounds

def get_poly_bounds(poly): “”” Find the bounds of the Polygon.

“”””

5.4 get_poly_hw

def get_poly_hw(poly): “”” Find height and width of the polygon.

“”””

CHAPTER 6

Relation

6.1 contour_intersects

def contour_intersects(np_arr1, np_arr2): “”” Determine two contours are intersected or not.

“”””

6.2 construct_intersection_polygon

def construct_intersection_polygon(np_arr1, np_arr2): “”” Construct polygon from the intersection part of two contours.

“”””

6.3 contour_contains

def contour_contains(np_arr1, np_arr2): “”” Determine if contour of np_arr1 contains contour of np_arr2.

“”””

6.4 cnt_dice_ratio

def cnt_dice_ratio(cnt1, cnt2, smooth=0.01): “”” Calculate the dice ratio between two contours.

“”””

6.5 cnt_jaccard_index

def cnt_jaccard_index(cnt1, cnt2, smooth=0.01): “”” Calculate the jaccard index between two contours.

“”””

6.6 point_in_contour

def point_in_contour(np_arr, py, px): “”” Determine point inside contour or not.

“”””

CHAPTER 7

Image

7.1 build_cnt_mask

def build_cnt_mask(np_arr): “”” Build an exterior rectangle mask based on contour

“”””

7.2 cnt_mask_img

def cnt_mask_img(img, np_arr): “”” Mask image by contour

“”””

7.3 cnt_mask_sub_img

def cnt_mask_sub_img(img, np_arr): “”” Mask sub image using contour

“”””

CHAPTER 8

About pycontour

pycontour is a python package for contour operation utilities.

Right now, this package mainly contains contour format transformation among OpenCV contour, Shapely polygon, and normal numpy array represetation. The package also contains contour properties calcuation utilities.