
pycontour Documentation

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

- *User Documentation*
- *About pycontour*

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).  
    """
```


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
    """
```


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.  
    """
```


4.1 ZernikeMoments

```
class ZernikeMoments: """ Calculate Zernike moments for contour
    """
```


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.
    """
```


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.
`"""`

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 representation. The package also contains contour properties calculation utilities.