SkySegmentor

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Version	0.0.0
Repository	https://github.com/knaidoo29/SkySegmentor
Documentation	TBA

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INTRODUCTION

SkySegmentor is a `python 3` package for splitting binary (or weighted) `HEALPix` maps or points on the sphere into equally weighted segments. The segmentation uses a sequential binary space partitioning scheme, a generalisation of the k-d tree algorithm. By definition all partitions are approximately equal (with errors the size of the `HEALPix` pixel scale).

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DEPENDENCIES

- numpy
- healpy

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INSTALLATION

SkySegmentor can be installed by first cloning the repository

```
git clone https://github.com/knaidoo29/SkySegmentor.git
cd SkySegmentor
```

and install by either running

```
pip install . [--user]
```

or

```
python setup.py build
python setup.py install
```

You should now be able to import the module:

```
import skysegmentor
```

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TUTORIALS

5.1 Basic Usage

5.1.1 Segmenting Healpix Maps

```
import healpy
import skysegmentor

# Healpix mask, where zeros are regions outside of the mask and ones inside the
# mask. You can also input a weighted map, where instead of 1s you give weights.
mask = # define mask values

Npartitions = 100 # Number of partitions
partitionmap = skysegmentor.segmentmapN(mask, Npartitions)
```

5.1.2 Segmenting Points on the Sphere

```
import skysegmentor

# Define points on the sphere to be segmented.
phi = # longitude defined in radians from [0, 2*pi]
the = # latitude defined in radians from [0, pi], where 0 = North Pole.

Npartitions = 100 # Number of partitions
partitionIDs = skysegmentor.segmentpointsN(phi, the, Npartitions)
```

if using RA and Dec in degrees you can convert to phi and the using

```
phi = np.deg2rad(ra)
the = np.deg2rad(90. - dec)
```

if not all points are equal, you can specify a weight

```
weights = # define point weights
partitionIDs = skysegmentor.segmentpointsN(phi, the, Npartitions, weights=weights)
```

Tutorials

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API

6.1 API

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CONTRIBUTORS

If you use `SkySegmentor` in a publication please cite:

```
TBA
```

and include a link to the SkySegmentor main page:

```
https://github.com/knaidoo29/SkySegmentor
```

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SUPPORT

If you have any issues with the code or want to suggest ways to improve it please open a new issue (here) or (if you don't have a github account) email krishna.naidoo.11@ucl.ac.uk.

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VERSION HISTORY

- **Version 0.0.0**: