Package ‘panstarrs’

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Title Interface to the Pan-STARRS API

Version 0.2.2

Description An interface to the API for ‘Pan-STARRS1’, a data archive of the PS1 wide-field astronomical survey. The package allows access to the PS1 catalog and to the PS1 images. (see <https://outerspace.stsci.edu/display/PANSTARRS/> for more information). You can use it to plan astronomical observations, make guidance pictures, find magnitudes in five broadband filters (g, r, i, z, y) and more.

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URL https://uskovgs.github.io/PanSTARRS/

BugReports https://github.com/uskovgs/PanSTARRS/issues

Depends R (>= 3.5)

Imports bit64, checkmate, curl, data.table, httr, jsonlite

Suggests dplyr, knitr, magick, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

Encoding UTF-8

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NeedsCompilation no

Author Grigory Uskov [cre, aut] (<https://orcid.org/0000-0002-0274-1350>)

Maintainer Grigory Uskov <uskov.russia@gmail.com>

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ps1_cone

Do a cone search of the PS1 catalog

Description
Do a cone search of the PS1 catalog

Usage
ps1_cone(
  ra,
  dec,
  r_arcmin = 0.05,
  table = c("mean", "stack", "detection", "forced_mean"),
  release = c("dr2", "dr1"),
  columns = NULL,
  verbose = FALSE,
  ...
)

Arguments
ra          (degrees) J2000 Right Ascension
dec         (degrees) J2000 Declination
r_arcmin    (arcmins) Search radius (<= 30 arcmins)
table       "mean" (default), "stack", "detection" or "forced_mean"
release     "dr1" or "dr2" (default)
columns     list of column names to include (NULL means use defaults)
verbose     print info about request
...          other parameters (e.g., nDetections.min = 2)

Value
data.frame
Examples

## Not run:
ps1_cone(ra = 139.334, dec = 68.635, r_arcmin = 0.05, nDetections.gt = 1)

## End(Not run)

ps1_crossmatch  Do a cross-match with PS1 catalog

Description

Do a cross-match with PS1 catalog

Usage

ps1_crossmatch(
  ra,
  dec,
  r_arcmin = 0.05,
  table = c("mean", "stack", "detection", "forced_mean"),
  release = c("dr2", "dr1"),
  verbose = FALSE
)

Arguments

ra  (degrees) numeric vector of J2000 Right Ascension
dec  (degrees) numeric vector of J2000 Declination
r_arcmin  (arcmins) Search radius (<= 30 arcmins)
table  "mean" (default), "stack", "detection", "forced_mean"
release  "dr1" or "dr2" (default)
verbose  print info about request

Value

data.frame

Examples

## Not run:
ps1_crossmatch(ra = c(268.70342, 168.87258), dec = c(71.54292, 60.75153))

## End(Not run)
ps1_image_color  

Get color image at a sky position

Description

Get color image at a sky position

Usage

ps1_image_color(
  ra,
  dec,
  size = 240,
  output_size = NULL,
  filters = "grizy",
  format = "jpg"
)

Arguments

ra  ra position in degrees
dec  dec position in degrees
size  extracted image size in pixels (0.25 arcsec/pixel)
output_size  output (display) image size in pixels (default = size). output_size has no effect for fits format images.
filters  string with filters to include
format  data format (options are "jpg", "png")

Value

the image url

Examples

## Not run:
ps1_image_color(ra = 83.633210, dec = 22.014460, size = 1280, filters="grz")

## End(Not run)
Description

Get grayscale image at a sky position

Usage

```r
ps1_image_gray(
  ra,
  dec,
  size = 240,
  output_size = NULL,
  filter = "g",
  format = "jpg"
)
```

Arguments

- `ra`: ra position in degrees
- `dec`: dec position in degrees
- `size`: extracted image size in pixels (0.25 arcsec/pixel)
- `output_size`: output (display) image size in pixels (default = size). output_size has no effect for fits format images.
- `filter`: string with filter to extract (one of grizy)
- `format`: data format (options are "jpg", "png")

Value

the image

Examples

```r
## Not run:
ps1_image_gray(ra = 83.633210, dec = 22.014460, size = 1280, filter = "i")
## End(Not run)
```
ps1_image_list  Get list of images

Description
Query ps1filenames.py service to get a list of images.

Usage
ps1_image_list(ra, dec, size = 240, filters = "grizy")

Arguments
ra ra position in degrees
dec dec position in degrees
size image size in pixels (0.25 arcsec/pixel)
filters string with filters to include

Details
src: https://ps1images.stsci.edu/ps1image.html

Value
table with the results

Examples
## Not run:
# Crab nebulae image
ps1_image_list(ra = 83.633210, dec = 22.014460, size = 1280, filters = "griz")

## End(Not run)

ps1_image_url  Get URL of images

Description
Get URL of images
Usage

```r
ps1_image_url(
  ra,  
  dec,  
  size = 240,  
  output_size = NULL,  
  filters = "grizy",  
  format = "jpg",  
  color = FALSE
)
```

Arguments

- **ra**: ra position in degrees
- **dec**: dec position in degrees
- **size**: extracted image size in pixels (0.25 arcsec/pixel)
- **output_size**: output (display) image size in pixels (default = size). output_size has no effect for fits format images.
- **filters**: string with filters to include
- **format**: data format (options are "jpg", "png" or "fits")
- **color**: if TRUE, creates a color image (only for jpg or png format). Default is return a list of URLs for single-filter grayscale images.

Value

string with the URL

Examples

```r
## Not run:
ps1_image_url(
  ra = 83.633210,  
  dec = 22.014460,  
  size = 1280,  
  format = "jpg",  
  filters = "grz",  
  color = T)
```

## End(Not run)
ps1_mast_resolve  Get the RA and Dec for an object using the MAST name resolver

Description
Get the RA and Dec for an object using the MAST name resolver

Usage
ps1_mast_resolve(name)

Arguments
name  Name of object

Value
list of ra, decl

Examples
## Not run:
ps1_mast_resolve('Acrux')
## End(Not run)

ps1_metadata  Metadata from PS1

Description
Return metadata for the specified catalog and table

Usage
ps1_metadata(table = "mean", release = "dr2")

Arguments
table  "mean", "stack", "forced_mean" or "detection"
release  "dr1" or "dr2" (default)

Value
Returns data.frame with columns: name, type, description
### ps1_resolve

**Examples**

```r
## Not run:
p1_resolve()
## End(Not run)
```

**Description**

Get the RA and Dec for objects from PanSTARRS catalog.

Only works for "north" objects with decl > -30. For all objects see function `ps1_mast_resolve`.

**Usage**

```r
ps1_resolve(target_names, verbose = FALSE)
```

**Arguments**

- `target_names`: character vector of target names (see example)
- `verbose`: print info about request

**Value**

data.frame

**Examples**

```r
## Not run:
p1_resolve(c("Andromeda", "SN 2005D", "Antennae", "ANTENNAE"))
## End(Not run)
```

### ps1_search

**Description**

Do a general search of the PS1 catalog (possibly without ra/dec/radius)

Do a general search of the PS1 catalog (possibly without ra/dec/radius)
Usage

```r
ps1_search(
    table = c("mean", "stack", "detection", "forced_mean"),
    release = c("dr2", "dr1"),
    columns = NULL,
    verbose = FALSE,
    ...
)
```

Arguments

- `table` "mean", "stack", "detection" or "forced_mean"
- `release` "dr1" or "dr2" (default)
- `columns` list of column names to include (NULL means use defaults)
- `verbose` print info about request
- `...` other parameters (e.g., nDetections.min = 2).

Value

data.frame

Examples

```r
## Not run:
ps1_search(
    table = 'detection',
    release = 'dr2',
    objid = 190361393344112894
)

ps1_search(
    table = 'mean',
    release = 'dr2',
    objid = 190361393344112894,
    columns = c('objName', 'raMean', 'decMean', 'rMeanPSFMag')
)
```

## End(Not run)
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