Package ‘panstarrs’

October 14, 2022

Title  Interface to the Pan-STARRS API
Version  0.1.0
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.
License  MIT + file LICENSE
URL  https://uskovgs.github.io/PanSTARRS/
BugReports  https://github.com/uskovgs/PanSTARRS/issues
Imports  attempt, dplyr, glue, httr, jsonlite, magrittr, purrr, RCurl,
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R topics documented:

checklegal  ................................................................. 2
ps1_cone  ................................................................. 2
ps1_crossmatch  ......................................................... 3
ps1_image_color  ......................................................... 4
**checklegal**

*Check legal*

**Description**

Checks if this combination of table and release is acceptable.

**Usage**

`checklegal(table, release)`

**Arguments**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>table</td>
<td>&quot;mean&quot;, &quot;stack&quot;, &quot;detection&quot;</td>
</tr>
<tr>
<td>release</td>
<td>&quot;dr2&quot;, &quot;dr1&quot;</td>
</tr>
</tbody>
</table>

**ps1_cone**

*Do a cone search of the PS1 catalog*

**Description**

Do a cone search of the PS1 catalog

**Usage**

```r
ps1_cone(
  ra,
  dec,
  r_arcmin = 0.05,
  table = c("mean", "stack", "detection"),
  release = c("dr2", "dr1"),
  columns = NULL,
  verbose = FALSE,
  ...
)
```
ps1_crossmatch

Arguments

ra (degrees) J2000 Right Ascension
dec (degrees) J2000 Declination
r_arcmin (arcmins) Search radius (<= 30 arcmins)
table "mean"(default), "stack", or "detection"
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"),
  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", or "detection"
release "dr1" or "dr2"(default)
verbose print info about request
ps1_image_color

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="griz")

## End(Not run)
ps1_image_gray  

Get grayscale image at a sky position

Description

Get grayscale image at a sky position

Usage

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

## 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**

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

## 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 = "griz",
    color = T)

## End(Not run)
```
ps1_mast_query  

Perform a MAST query.

Description

Perform a MAST query.

Usage

ps1_mast_query(request)

Arguments

request  (list): The MAST request json object

Value

Returns response

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 = c("mean", "stack", "detection"),
  release = c("dr2", "dr1")
)

Arguments

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

Value

Returns data.frame with columns: name, type, description

Examples

  ## Not run:
  ps1_metadata()
  ## End(Not run)

ps1_resolve

Get the RA and Dec for objects from PanSTARRS catalog.

Description

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

Usage

ps1_resolve(target_names, full_table = FALSE, verbose = FALSE)

Arguments

  target_names    character vector of target names (see example)
  full_table      show full cross-matched table or only main columns.
  verbose         print info about request
psl_search

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

Description

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

Usage

psl_search(
  table = c("mean", "stack", "detection"),
  release = c("dr2", "dr1"),
  columns = NULL,
  verbose = FALSE,
  ...
)

Arguments

  table  "mean", "stack", or "detection"
  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)
```
Index

checklegal, 2

ps1_cone, 2
ps1_crossmatch, 3
ps1_image_color, 4
ps1_image_gray, 5
ps1_image_list, 6
ps1_image_url, 6
ps1_mast_query, 8
ps1_mast_resolve, 8
ps1_metadata, 9
ps1_resolve, 9
ps1_search, 10