Package ‘panstarrs’

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Title Interface to the Pan-STARRS API

Version 0.2.0

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.

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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 celestial, dplyr, FITSio, knitr, magicaxis, magick, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

Encoding UTF-8

RoxygenNote 7.2.3

NeedsCompilation no

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Repository CRAN

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ps1_cone

Do a cone search of the PS1 catalog

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)
ps1_crossmatch

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)
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

```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 = "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 = "grz",
  color = T)
## End(Not run)
```
ps1_mast_resolve  
\textit{Get the RA and Dec for an object using the MAST name resolver}

\textbf{Description}

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

\textbf{Usage}

\begin{verbatim}
ps1_mast_resolve(name)
\end{verbatim}

\textbf{Arguments}

\begin{itemize}
  \item \texttt{name} \hspace{1cm} Name of object
\end{itemize}

\textbf{Value}

list of ra, decl

\textbf{Examples}

\begin{verbatim}
## Not run:
ps1_mast_resolve('Acru')
## End(Not run)
\end{verbatim}

ps1_metadata  
\textit{Metadata from PS1}

\textbf{Description}

Return metadata for the specified catalog and table

\textbf{Usage}

\begin{verbatim}
ps1_metadata(table = "mean", release = "dr2")
\end{verbatim}

\textbf{Arguments}

\begin{itemize}
  \item \texttt{table} \hspace{1cm} "mean", "stack", "forced_mean" or "detection"
  \item \texttt{release} \hspace{1cm} "dr1" or "dr2"(default)
\end{itemize}

\textbf{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

```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

```
## Not run:
ps1_resolve(c("Andromeda", "SN 2005D", "Antennae", "ANTENNAE"))

## End(Not run)
```

---

**ps1_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

```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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