
catarob Documentation

Release

Author

September 29, 2013

CONTENTS

1	Getting start with Catarob	3
1.1	What?	3
1.2	Why?	3
1.3	Summary	3
1.4	Build instructions (Linux)	3
1.5	Authors, Copyright & License	3
2	catarob package	5
2.1	Subpackages	5
2.2	Module contents	10
3	Indices and tables	11
	Python Module Index	13
	Index	15

Contents:

GETTING START WITH CATAROB

1.1 What?

Catarob is a GUI granulometric analysis from images based on segmentation.

1.2 Why?

Following a need to perform the knowledge of the Rhone (river) bed. A catamaran-teleoperated has been acquired. It consists of reflex camera.

1.3 Summary

Catarob is a python package coming up with grain size from image at large. It split in 3 sub-packages : #. *core* : the core functions of the package #. *gui* : the graphical user interface which which use core functions #. *lib* : several functions useful for the core sub-package

1.4 Build instructions (Linux)

Compilation is ensured by Python distutils tools.

You will need the following tools :

- Python version 2.7 or later with the distutils package.
- Python library matplotlib, numpy, scipy, pymorph, mamba image

Todo

Add setup.py and configure it

1.5 Authors, Copyright & License

Copyright 2013, Pegot-Ogier Thomas <thomas.pegot@gmail.com>

Analyz is ruled by the **GPL v3 License Terms**:

CATAROB PACKAGE

2.1 Subpackages

2.1.1 catarob.core package

Submodules

catarob.core.base module

Created on 22 août 2013

@author: thomas

class catarob.core.base.**AutoSlots**

Bases: type

Define slot in each class (earn memory)

catarob.core.base.**auto_adapt_to_methods** (*decorator*)

catarob.core.base.**opened** (**args, **kws*)

catarob.core.base.**opened_w_error** (**args, **kws*)

catarob.core.base.**singleton** (*cls*)

catarob.core.base.**stdout_redirected** (**args, **kws*)

catarob.core.base.**typedef_control** (**args, **kwargs*)

Check paramters' type of each input of function

catarob.core.base.**working_directory** (**args, **kws*)

catarob.core.correction module

Created on 31 août 2013

@author: thomas

class catarob.core.correction.**Correction**

Bases: object

catarob.core.filtering module

class catarob.core.filtering.**Filtering** (*spatial_radius=None, range_radius=None*)

Bases: object

Segmenter class using the mean shift GPU OpenCV to segment image Example:

```
import cv2
from gpumeanshift import filter
I = cv2.imread("path/to/image", cv2.CV_IMREAD_COLOR)
A = filter(I, 12, 12, 1)
```

range_radius None

Range radius of the search window

spatial_radius None

Spatial radius of the search window

catarob.core.fitting module

Created on 31 août 2013

@author: thomas

class catarob.core.fitting.**Fitting**

Bases: object

catarob.core.preprocessing module

Created on 17 août 2013

class catarob.core.preprocessing.**Preprocessing**

Bases: object

static **cv_resize** (*image, size_choice=None*)

Resize an iplimage

Parameters **size_choice** (*iplimage CV_8UC3*) – “694x462” or “1392x924” or None

Returns image resized

Return type same as size_choice

static **extraction_laser** (*image, disp=False*)

Extraction des laser en image de label

static **find_height** (**args_, **kwargs_*)

static **read_metadata** (*path*)

Pick model, focal and zoom data from Exif data of picture.

Parameters **path** (*str*) – full picture path

Returns model, focal, zoom

Return type tuple

catarob.core.segmentation module

Created on 31 août 2013

@author: thomas

```
class catarob.core.segmentation.Segmentation
    Bases: object
```

Module contents

core (catarob.core)

Sub-package for objects used in core.

As listed below, this sub-package contains image processing functions and classes.

Core Classes

2.1.2 catarob.gui package

Submodules

catarob.gui.Ui_mainwindow module

```
class catarob.gui.Ui_mainwindow.Ui_MainWindow
    Bases: object
    retranslateUi (MainWindow)
    setupUi (MainWindow)
```

catarob.gui.icons_rc module

```
catarob.gui.icons_rc.qCleanupResources ()
catarob.gui.icons_rc.qInitResources ()
```

catarob.gui.main module

Module implementing MainWindow.

```
class catarob.gui.main.MainWindow (parent=None)
    Bases: PyQt4.QtGui.QMainWindow, catarob.gui.Ui_mainwindow.Ui_MainWindow
    Class documentation goes here.
```

catarob.gui.mainwindow module

Module implementing MainWindow.

```
class catarob.gui.mainwindow.MainWindow (parent=None)
    Bases: PyQt4.QtGui.QMainWindow, catarob.gui.Ui_mainwindow.Ui_MainWindow,
    catarob.core.preprocessing.Preprocessing

    Class documentation goes here.

    alloc_attr ()

    on_FilterButton_clicked ()

    on_OpenButton_clicked ()
        Slot documentation goes here.

    on_RegisterButton_clicked ()

    on_actionHelp_2_triggered ()
        Slot documentation goes here.

    on_actionQuit_triggered ()
        Slot documentation goes here.

    on_actionRun_all_2_triggered ()
        Slot documentation goes here.

    on_actionRun_all_triggered ()
        Slot documentation goes here.

    on_actionSave_current_image_2_triggered ()

    on_actionSave_current_image_triggered ()
        Slot documentation goes here.

    on_actionStop_triggered ()
        Slot documentation goes here.

    on_actionView_statistics_triggered ()
        Slot documentation goes here.

    show_curr_image ()

    show_curr_metadata ()

    update ()
        Call class and 4update image, and window
```

catarob.gui.menumanager module

```
class catarob.gui.menumanager.MenuManager (parent=None)
    Bases: PyQt4.QtGui.QMainWindow

    load_file (path=None)

class catarob.gui.menumanager.OpenCVQImage (opencvBgrImg)
    Bases: PyQt4.QtGui.QImage
```

catarob.gui.progressbar module

```
class catarob.gui.progressbar.MyAppli (parent=None)
    Bases: PyQt4.QtGui.QWidget

    incProgress ()
        Increment the progress dialog

    on_btnStart_clicked ()
        Start the treatment in the thread

class catarob.gui.progressbar.MyThread (parent)
    Bases: PyQt4.QtCore.QThread

    cancel ()
        SLOT to cancel treatment

    run ()

catarob.gui.progressbar.bin (QTextStream) → QTextStream
catarob.gui.progressbar.hex (QTextStream) → QTextStream
catarob.gui.progressbar.oct (QTextStream) → QTextStream
```

catarob.gui.termstream module

```
class catarob.gui.termstream.TermStream
    Bases: PyQt4.QtCore.QObject

    fileno ()

    flush ()

    messageWritten None

    static stderr ()

    static stdout ()

    write (msg)
```

Module contents

“

core (catarob.gui)

Sub-package for objects used in gui.

As listed below, this sub-package contains Qt GUI derivated classe.

Core Classes

2.1.3 catarob.lib package

Submodules

catarob.lib.cvnumpy module

Created on 18 août 2013

@author: thomas

```
catarob.lib.cvnumpy.array2cv(a)
```

```
catarob.lib.cvnumpy.cv2array(im)
```

Module contents

2.2 Module contents

2.2.1 catarob

Provides

1. An array object of arbitrary homogeneous items
2. Fast image processing over arrays
3. Qt Gui interface

How to use the documentation

We recommend exploring the docstrings using [IPython](#), an advanced Python shell with TAB-completion and introspection capabilities. See below for further instructions.

The docstring examples assume that *catarob* has been imported as *cb*:

```
>>> import catarob as cb
```

Use the built-in `help` function to view a function's docstring:

```
>>> help(cb)
...
```

Available subpackages

core Core functions used by gui

lib Basic functions used by several sub-packages.

gui Graphical interface that use core functions

INDICES AND TABLES

- *genindex*
- *modindex*
- *search*

C

catarob, 10
catarob.core, 7
catarob.core.base, 5
catarob.core.correction, 5
catarob.core.filtering, 6
catarob.core.fitting, 6
catarob.core.preprocessing, 6
catarob.core.segmentation, 7
catarob.gui, 9
catarob.gui.icones_rc, 7
catarob.gui.main, 7
catarob.gui.mainwindow, 8
catarob.gui.menumanager, 8
catarob.gui.progressbar, 9
catarob.gui.termstream, 9
catarob.gui.Ui_mainwindow, 7
catarob.lib, 10
catarob.lib.cvnumpy, 10

p

preprocessing (*Unix*), 6

A

alloc_attr() (catarob.gui.mainwindow.MainWindow method), 8
 array2cv() (in module catarob.lib.cvnumpy), 10
 auto_adapt_to_methods() (in module catarob.core.base), 5
 AutoSlots (class in catarob.core.base), 5

B

bin() (in module catarob.gui.progressbar), 9

C

cancel() (catarob.gui.progressbar.MyThread method), 9
 catarob (module), 10
 catarob.core (module), 7
 catarob.core.base (module), 5
 catarob.core.correction (module), 5
 catarob.core.filtering (module), 6
 catarob.core.fitting (module), 6
 catarob.core.preprocessing (module), 6
 catarob.core.segmentation (module), 7
 catarob.gui (module), 9
 catarob.gui.icones_rc (module), 7
 catarob.gui.main (module), 7
 catarob.gui.mainwindow (module), 8
 catarob.gui.menumanager (module), 8
 catarob.gui.progressbar (module), 9
 catarob.gui.termstream (module), 9
 catarob.gui.Ui_mainwindow (module), 7
 catarob.lib (module), 10
 catarob.lib.cvnumpy (module), 10
 Correction (class in catarob.core.correction), 5
 cv2array() (in module catarob.lib.cvnumpy), 10
 cv_resize() (catarob.core.preprocessing.Preprocessing static method), 6

E

extraction_laser() (catarob.core.preprocessing.Preprocessing static method), 6

F

fileno() (catarob.gui.termstream.TermStream method), 9

Filtering (class in catarob.core.filtering), 6
 find_height() (catarob.core.preprocessing.Preprocessing static method), 6
 Fitting (class in catarob.core.fitting), 6
 flush() (catarob.gui.termstream.TermStream method), 9

H

hex() (in module catarob.gui.progressbar), 9

I

incProgress() (catarob.gui.progressbar.MyAppli method), 9

L

load_file() (catarob.gui.menumanager.MenuManager method), 8

M

MainWindow (class in catarob.gui.main), 7
 MainWindow (class in catarob.gui.mainwindow), 8
 MenuManager (class in catarob.gui.menumanager), 8
 messageWritten (catarob.gui.termstream.TermStream attribute), 9
 MyAppli (class in catarob.gui.progressbar), 9
 MyThread (class in catarob.gui.progressbar), 9

O

oct() (in module catarob.gui.progressbar), 9
 on_actionHelp_2_triggered() (catarob.gui.mainwindow.MainWindow method), 8
 on_actionQuit_triggered() (catarob.gui.mainwindow.MainWindow method), 8
 on_actionRun_all_2_triggered() (catarob.gui.mainwindow.MainWindow method), 8
 on_actionRun_all_triggered() (catarob.gui.mainwindow.MainWindow method), 8
 on_actionSave_current_image_2_triggered() (catarob.gui.mainwindow.MainWindow method), 8

on_actionSave_current_image_triggered()
(catarob.gui.mainwindow.MainWindow
method), 8

on_actionStop_triggered()
(catarob.gui.mainwindow.MainWindow
method), 8

on_actionView_statistics_triggered()
(catarob.gui.mainwindow.MainWindow
method), 8

on_btnStart_clicked() (catarob.gui.progressbar.MyAppli
method), 9

on_FilterButton_clicked()
(catarob.gui.mainwindow.MainWindow
method), 8

on_OpenButton_clicked()
(catarob.gui.mainwindow.MainWindow
method), 8

on_RegisterButton_clicked()
(catarob.gui.mainwindow.MainWindow
method), 8

OpenCVQImage (class in catarob.gui.menumanager), 8

opened() (in module catarob.core.base), 5

opened_w_error() (in module catarob.core.base), 5

P

Preprocessing (class in catarob.core.preprocessing), 6

preprocessing (module), 6

Q

qCleanupResources() (in module catarob.gui.icones_rc),
7

qInitResources() (in module catarob.gui.icones_rc), 7

R

range_radius (catarob.core.filtering.Filtering attribute), 6

read_metadata() (catarob.core.preprocessing.Preprocessing
static method), 6

retranslateUi() (catarob.gui.Ui_mainwindow.Ui_MainWindow
method), 7

run() (catarob.gui.progressbar.MyThread method), 9

S

Segmentation (class in catarob.core.segmentation), 7

setupUi() (catarob.gui.Ui_mainwindow.Ui_MainWindow
method), 7

show_curr_image() (catarob.gui.mainwindow.MainWindow
method), 8

show_curr_metadata() (catarob.gui.mainwindow.MainWindow
method), 8

singleton() (in module catarob.core.base), 5

spatial_radius (catarob.core.filtering.Filtering attribute), 6

stderr() (catarob.gui.termstream.TermStream static
method), 9

stdout() (catarob.gui.termstream.TermStream static
method), 9

stdout_redirected() (in module catarob.core.base), 5

T

TermStream (class in catarob.gui.termstream), 9

typedef_control() (in module catarob.core.base), 5

U

Ui_MainWindow (class in catarob.gui.Ui_mainwindow),
7

update() (catarob.gui.mainwindow.MainWindow
method), 8

W

working_directory() (in module catarob.core.base), 5

write() (catarob.gui.termstream.TermStream method), 9