# pyFloribotVision Documentation

Release 0.1

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### PYFLORIBOTVISION PACKAGE

### 1.1 pyfloribotvision Package

### 1.2 PyFloribotVision Module

 $\textbf{class} \ \texttt{pyfloribotVision.PyFloribotVision.PyFloribotVision} \ (\textit{configFile}, \ \textit{loggingConfig, relativePath} = \textit{True})$ 

Bases: object

Application-Startup handling Startup-Parameters

\_\_init\_\_(configFile, loggingConfig, relativePath=True)
Object initialization

#### **Parameters**

- configFile path to the plugin config
- loggingConfig path to the logging config
- relativePath if given paths not relative this should be set to False (default True)

#### checkConfigExist()

checks if config files are exists and readable

#### executeApplicationContext()

execute configured behavior (invoke plugin methods)

#### initApplicationContext (pluginprefix)

initializes the application context

**Parameters pluginprefix** – plugins should be relative under ./plugins if class invoked trough a startup-script or another application, the prefix have to point into the package where the plugin-package could be find

pyfloribotvision.PyFloribotVision.main(name, argv)

Startup entry point, parsing commandline parameter

#### **Parameters**

- name Name of the script which was executed
- argv the list of command line arguments passed to the Python script

### 1.3 Subpackages

#### 1.3.1 controller Package

```
controller Package
```

#### ConfigController Module

Simple Wrapper for the ConfigParser. Loads the Configuration-File and Convert its Data into a Dictionary Structure. Each Section becomes a Key for the tob-level dict and serves the Option Values in an dict again

\_\_init\_\_\_(configFileName)

Load the rawConfig from Config-File with the ConfigParser and convert the rawConfig into a dict structure

Parameters configFileName – Path to the Configuration-File

#### convertRawConfigToDict(rawConfig=None)

Converts the rawConfig into a dict structure and returns them

Parameters rawConfig – rawConfig from ConfigParser (default None)

#### getConfig()

Returns the config as dict

getOption (sectionname, optionname)

Returns the value from the option which belongs to the given sectionname

#### **Parameters**

- sectionname name of the section
- optionname name of the option which value will be returned

getSection (sectionname)

Returns the whole section from the dict-config

Parameters sectionname – name of the section which will be returned

#### DataLinkController Module

```
class pyfloribotvision.controller.DataLinkController.DataLinkController
    Bases: object
    Class for data-exchange between the plugins
    __init___()
```

```
getValue(item)
```

Returns the value corresponding to key (item)

**Parameters item** (*object*) – key object in the square parenthesis

**Returns** entry of the dictionary

Return type object

Creates internal dictionary

#### setValue (key, value)

set value to the internal dictionary

#### **Parameters**

• key – key to set

• value – value to set for the given key

#### PluginController Module

```
class pyfloribotvision.controller.PluginController.PluginController(pluginprefix)
    Bases: object
    The PluginController handles loading and finding of the Plugins
```

```
__init__(pluginprefix)
```

Initializes the PluginController and load its Plugins

#### Parameters pluginprefix -

findPlugin (item, \_itemList=None)

Find a Plugin and returns it if found, otherwise None

#### **Parameters**

- **item** the Plugin to search for if item is an instance of str the format is according to a relative import in the plugin package. e.g.: 'opency.cvDrawContours'
- \_itemList only for recursion purpose, should not be used due to cache mechanisms (default: None)

loadPlugins (module=None, forceReload=False)

Load Plugins from 'plugin' package and returns them as dict

#### **Parameters**

- module Python-Module to search in (default: None)
- forceReload True forces reload of cached PluginList (default: False)

#### 1.3.2 dto Package

#### dto Package

#### PluginDTO Module

```
class pyfloribotvision.dto.PluginDTO.PluginDTO
    Bases: object
    Plugin-Data-Object for compact access to all Plugin - no logic
    __init___()
```

#### 1.3.3 manager Package

#### manager Package

#### ContextManager Module

Prepare Application-Context and give the ability to access the Context trough normal initialisation for a given Pseudo-Namespace. The ContextManager provides the Plugins-, Configuration- and DataLink-Controller as well as the ProcessManager.

```
init (contextName=None)
```

Initialize a new instance per given contextName. Every new init for a known contextName returns previously initialized instance for corresponding context.

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**Parameters contextName** – specifies the context (default None)

#### executeContext()

Triggers the executePlugins Method from the ProcessManager

initContext (configFileName, loggingConfigFileName, pluginprefix)

Initializes the Controller, Manager and Logger for given configuration data.

#### **Parameters**

- configFileName Configuration-File for the ConfigController
- loggingConfigFileName Configuration-File for the Logger
- pluginprefix Prefix where the Plugin-Package can be found

#### ProcessManager Module

Bases: object

Manages the Process and is responsibly for the runtime behavior

\_\_init\_\_ (pluginController, configController, dataLinkController)

Gets the 'GENERAL' section from the ConfigController and acquires and instantiate the Plugins specified by the 'pluginSequence' Option in the Configuration

#### **Parameters**

- pluginController Instance of the PluginController
- configController Instance of the ConfigController
- dataLinkController Instance of the DataLinkController

#### acquirePlugins (generalConfigSection=None)

Acquire the Plugins specified by the 'pluginSequence' Option in the Configuration given by the dict generalConfigSection or internal config if generalConfigSection is None. Furthermore returns a list of PluginDto for each loaded Plugin whose Name in the pluginSequence Option don't start with an exclamation mark

**Parameters generalConfigSection** – Config for 'GENERAL' section (default None)

executePlugins (pluginDtoList=None)

instantiatePlugins (pluginDtoList=None)

Instantiate the Plugins in the list of PluginDto's and return the List

**Parameters** pluginDtoList – List of PluginDto's (default None)

 $\verb|triggerPluginMethods|| (methodName, pluginDtoList=None)|$ 

Triggers the corresponding methods of the active Plugins in the pluginDtoList

#### **Parameters**

- methodName Name of the Plugin-Method to trigger
- pluginDtoList List of PluginDto's (default None)

#### 1.3.4 plugins Package

```
plugins Package
```

```
BaseModule Module
class pyfloribotvision.plugins.BaseModule(**kwargs)
    Bases: object
    __init__(**kwargs)
    externalCall()
    loadOptions()
    obligatoryConfigOptions = {}
    postOptActions()
    preOptActions()
    timeBypassActions()
Subpackages
floribot Package
floribot Package
FilePickleSegmentOutput Module
class pyfloribotvision.plugins.floribot.FilePickleSegmentOutput.FilePickleSegmentOutput(**
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    appendOutputDataToCache()
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'outputFile': None, 'inputContourName': None, 'creat
    postOptActions()
    preOptActions()
    writeCacheToFile()
opency Package
opency Package
CVBitwiseOr Module
class pyfloribotvision.plugins.opencv.CVBitwiseOr.CVBitwiseOr (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
```

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obligatoryConfigOptions = {'outputImageName': None, 'inputImageName1': None, 'inputImageName2': None

```
CVContourConstraint Module
class pyfloribotvision.plugins.opencv.CVContourConstraint.CVContourConstraint (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
     init (**kwargs)
    externalCall()
    obligatoryConfigOptions = {'contourFunctions': None, 'resultPlaceholderName': None, 'inputContourName'
    postOptActions()
CVDrawContours Module
class pyfloribotvision.plugins.opencv.CVDrawContours.CVDrawContours(**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    if inputContourIndexListName is empty, then draw all contours
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'inputContourIndexListName': None, 'inputContourN
    postOptActions()
CVFindContours Module
class pyfloribotvision.plugins.opencv.CVFindContours.CVFindContours(**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'cvMode': None, 'outputHierarchyName': None, 'cvM
    postOptActions()
CVGaussBlur Module
class pyfloribotvision.pluqins.opencv.CVGaussBlur(**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'sigmaY': None, 'outputImageName': None, 'sigmaX':
    postOptActions()
CVInRange Module
class pyfloribotvision.plugins.opencv.CVInRange.CVInRange (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
     __init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'cvValueListNames': None, 'outputMaskListNames': I
    postOptActions()
```

```
CVMorphologyEx Module
class pyfloribotvision.plugins.opencv.CVMorphologyEx.CVMorphologyEx(**kwargs)
          Bases: pyfloribotvision.plugins.BaseModule.BaseModule
            init (**kwargs)
          externalCall()
          obligatoryConfigOptions = {'inputImageName': None, 'cvOperation': None, 'outputImageName': None, 'inputImageName': None, 'inpu
         postOptActions()
CVStructuringElement Module
class pyfloribotvision.plugins.opencv.CVStructuringElement.CVStructuringElement (**kwargs)
          Bases: pyfloribotvision.plugins.BaseModule.BaseModule
          ___init___(**kwargs)
          externalCall()
          obligatoryConfigOptions = {'outputElementName': None, 'cvKSize': None, 'cvShape': None}
          postOptActions()
CVTransformColor Module
class pyfloribotvision.pluqins.opencv.CVTransformColor.CVTransformColor(**kwargs)
          Bases: pyfloribotvision.plugins.BaseModule.BaseModule
          ___init___(**kwargs)
          externalCall()
          obligatoryConfigOptions = {'inputImageName': None, 'colorCode': None, 'outputImageName': None}
          postOptActions()
CVValueList Module
class pyfloribotvision.plugins.opencv.CVValueList.CVValueList (**kwargs)
          Bases: pyfloribotvision.plugins.BaseModule.BaseModule
           ___init___(**kwargs)
          externalCall()
          obligatoryConfigOptions = {'runCycle': ['oneShoot', 'loop'], 'inputValues': None, 'outputNames': None, 'inp
          postOptActions()
DirectCVCamSource Module
class pyfloribotvision.plugins.opencv.DirectCVCamSource(**kwargs)
          Bases: pyfloribotvision.plugins.BaseModule.BaseModule
          ___init___(**kwargs)
          externalCall()
          initCam()
          obligatoryConfigOptions = {'camId': None, 'outputImageName': None, 'frameHeight': None, 'frameWidth':
          postOptActions()
          timeBypassActions()
```

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class pyfloribotvision.plugins.opencv.DirectCVImageSource.DirectCVImageSource(**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
     init (**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageFile': None, 'outputImageName': None}
    postOptActions()
FileCVImageOutput Module
class pyfloribotvision.plugins.opencv.FileCVImageOutput.FileCVImageOutput (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageName': None, 'outputImageFile': None}
    postOptActions()
ScreenCVImageOutput Module
class pyfloribotvision.plugins.opencv.ScreenCVImageOutput (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'inputImageList': None}
    postOptActions()
python Package
python Package
DeltaTimePerFrame Module
class pyfloribotvision.plugins.python.DeltaTimePerFrame .DeltaTimePerFrame (**kwargs)
    Bases: pyfloribotvision.plugins.BaseModule.BaseModule
    ___init___(**kwargs)
    externalCall()
    obligatoryConfigOptions = {'startFrame': None, 'stopFrame': None, 'displayTime': ['True', 'False']}
    postOptActions()
    preOptActions()
    printTime (time)
ros Package
ros Package
```

CHAPTER TWO

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