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# **pyFloribotVision Documentation**

***Release 0.1***

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# PYFLORIBOTVISION

## 1.1 Project-Page

The GitHub project page is located at: <http://acuda.github.io/pyFloribotVision/>

## 1.2 General

This student research project is designed to be a part of the FloribotProject (<http://floribot.de/>). Admittedly the stand-alone ability should be given.

The main goal is an high-grade configurable vision system. The vision process is described through configuration files whose sections are mapped to modules/plugins where the functionality is implied.

## 1.3 Advance notice

This project is in an early state. It's not recommended to use it due to the possibility of drastic changes. Furthermore there is no documentation of the project until now.



# CONTENTS

## 2.1 pyfloribotvision Package

### 2.1.1 pyfloribotvision Package

### 2.1.2 PyFloribotVision Module

**class** `pyfloribotvision.PyFloribotVision.PyFloribotVision` (*configFile, loggingConfig, relativePath=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

## 2.1.3 Subpackages

### controller Package

#### controller Package

#### ConfigController Module

**class** pyfloribotvision.controller.ConfigController.**ConfigController** (*configFileName*)

Bases: object

Simple Wrapper for the ConfigParser. Loads the Configuration-File and Convert it's Data into a Dictionary Structure. Each Section becomes a Key for the tob-level dict and serves the Option Values in an concatenated-dict saved as section-value

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

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

**Parameters** *configFileName* (*str*) – Path to the Configuration-File

**convertRawConfigToDict** (*rawConfig=None*)

Converts the rawConfig into a dict structure and returns them

**Parameters** *rawConfig* – rawConfig from ConfigParser, if *None* the previously loaded configuration will be converted (default *None*)

**Returns** converted configuration with sections on top level

**Return type** dict

**getConfig** ()

simple getter for the converted configuration

**Returns** dictionary or *None* if no configuration was loaded

**Return type** dict

**getOption** (*sectionname, optionname*)

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

**Parameters**

- **sectionname** (*str*) – name of the section
- **optionname** (*str*) – name of the option which value will be returned

**Return type** str

**getSection** (*sectionname*)

simple getter for a section (sub-dict) from the configuration (top-dict)

**Parameters** *sectionname* (*str*) – name of the section which will be returned

**Returns** sub-dictionary or *None* if no section found

**Return type** dict

#### PluginController Module

**class** pyfloribotvision.controller.PluginController.**PluginController** (*pluginprefix*)

Bases: object

The PluginController handles the loading and finding of the Plugins



**\_\_init\_\_** (*pluginprefix*)

Initializes the PluginController and load its Plugins

**Parameters** **pluginprefix** (*str*) – the package-path where the plugin-package can be found

**loadPluginClass** (*item*)

Loads a PluginClass by relativ path and returns it if found, otherwise None Due to conventions, the name of the PluginClass must be the same as the FileName containing the class.

**Parameters** **item** (*str*) – the Plugin to search for str of the format according to a relative import in the plugin package. e.g.: 'opencv.cvDrawContours'

**Returns** the class of the loaded plugin or None if an error occurred

## 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\_\_** ()

## guicontrol Package

### guicontrol Package

#### Subpackages

#### qt4 Package

#### qt4 Package

#### Subpackages

#### ui Package

#### ui Package

#### BaseParameterClasses Module

**class** pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.**ValueCallback**

Bases: object

**createCallbackListIfNotExist** ()

**doNotify** (*value*)

**registerNotify** (*fnc*)

**class** pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.**ValueUpdate**

Bases: object

**updateValue** (*value*, *dstFnc*, *convertFnc*, *preConvertFnc=None*, *postConvertFnc=None*,  
\*\**kwargs*)

**BoolParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.BoolParameter.BoolParameter
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_BoolParameter.Ui_BoolParameter
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback

    __init__()

    checkboxChanged (value)
```

**ConfigControl Module**

```
class pyfloribotvision.guicontrol.qt4.ui.ConfigControl.ConfigControl
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_ConfigControl.Ui_ConfigControl

    __init__()
```

**FloatParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.FloatParameter.FloatParameter
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_IntType.Ui_IntType,
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueUpdate,
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback

    __init__()

    lineEditChanged (value)

    scaleValue (value, scaleFactor=1)

    sliderChanged (value)
```

**ImageParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.ImageParameter.ImageParameter (**kwargs)
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_ImageParameter.Ui_ImageParameter

    __init__ (**kwargs)

    closeImage ()

    convertImage ()

    toggleShowImage ()

    updateImage ()
```

**IntListElementParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.IntListElementParameter.IntListElementParameter
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_IntListElement.Ui_IntListElement
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueUpdate,
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback

    __init__()

    lineEditChanged (value)

    sliderChanged (value)
```

**IntListParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.IntListParameter.IntListParameter
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_IntListParameter.Ui_IntListParameter
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueUpdate,
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback
```

```
__init__()  
setContent (valueList)  
widgetValueChanged (caller, value)
```

#### **IntNestedListParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.IntNestedListParameter.IntNestedListParameter  
    Bases: PyQt4.QtGui.QWidget,pyfloribotvision.guicontrol.qt4.ui.Ui_IntListParameter.Ui_I  
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueUpdate,  
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback  
  
    __init__()  
  
    setBaseContent (valueList)  
  
    widgetValueChanged (caller, value)
```

#### **IntParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.IntParameter.IntParameter  
    Bases: PyQt4.QtGui.QWidget,pyfloribotvision.guicontrol.qt4.ui.Ui_IntType.Ui_IntType,  
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueUpdate,  
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback  
  
    __init__()  
  
    lineEditChanged (value)  
  
    sliderChanged (value)
```

#### **MainWindow Module**

```
class pyfloribotvision.guicontrol.qt4.ui.MainWindow.MainWindow  
    Bases: PyQt4.QtGui.QMainWindow,pyfloribotvision.guicontrol.qt4.ui.Ui_MainWindow.Ui_Mai  
  
    __init__()  
  
    cleanParameterBase()  
  
    handleBoolType (parameter)  
  
    handleFloatType (parameter)  
  
    handleImageType (parameter)  
  
    handleIntListType (parameter)  
  
    handleIntNestedListType (parameter)  
  
    handleIntType (parameter)  
  
    handleName (parameter)  
  
    handleStringType (parameter)  
  
    initTypeHandleDict()  
  
    itemClicked (item)  
  
    loadList()  
  
    widgetValueChanged (caller, value)
```

### ParameterBase Module

```
class pyfloribotvision.guicontrol.qt4.ui.ParameterBase.ParameterBase (**kwargs)
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_ParameterBase.Ui_ParameterBase

    __init__ (**kwargs)
```

### PluginList Module

```
class pyfloribotvision.guicontrol.qt4.ui.PluginList.PluginList
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_PluginList.Ui_PluginList

    __init__ ()
```

### StringParameter Module

```
class pyfloribotvision.guicontrol.qt4.ui.StringParameter.StringParameter
    Bases: PyQt4.QtGui.QWidget, pyfloribotvision.guicontrol.qt4.ui.Ui_StringParameter.Ui_StringParameter,
    pyfloribotvision.guicontrol.qt4.ui.BaseParameterClasses.ValueCallback

    __init__ ()

    lineEditChanged (value)
```

### Ui\_BoolParameter Module

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_BoolParameter.Ui_BoolParameter
    Bases: object

    retranslateUi (BoolParameter)

    setupUi (BoolParameter)
```

### Ui\_ConfigControl Module

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_ConfigControl.Ui_ConfigControl
    Bases: object

    retranslateUi (ConfigControl)

    setupUi (ConfigControl)
```

### Ui\_ImageParameter Module

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_ImageParameter.Ui_ImageParameter
    Bases: object

    retranslateUi (ImageParameter)

    setupUi (ImageParameter)
```

### Ui\_IntListElement Module

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_IntListElement.Ui_IntListElement
    Bases: object

    retranslateUi (IntListElement)

    setupUi (IntListElement)
```

**Ui\_IntListParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_IntListParameter.Ui_IntListParameter
    Bases: object

    retranslateUi (IntListParameter)

    setupUi (IntListParameter)
```

**Ui\_IntType Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_IntType.Ui_IntType
    Bases: object

    retranslateUi (IntType)

    setupUi (IntType)
```

**Ui\_MainWindow Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_MainWindow.Ui_MainWindow
    Bases: object

    retranslateUi (MainWindow)

    setupUi (MainWindow)
```

**Ui\_ParameterBase Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_ParameterBase.Ui_ParameterBase
    Bases: object

    retranslateUi (ParameterBase)

    setupUi (ParameterBase)
```

**Ui\_PluginList Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_PluginList.Ui_PluginList
    Bases: object

    retranslateUi (PluginList)

    setupUi (PluginList)
```

**Ui\_StringParameter Module**

```
class pyfloribotvision.guicontrol.qt4.ui.Ui_StringParameter.Ui_StringParameter
    Bases: object

    retranslateUi (StringParameter)

    setupUi (StringParameter)
```

**uiimpl Package****uiimpl Package**

## manager Package

### manager Package

#### ContextManager Module

**class** pyfloribotvision.manager.ContextManager.**ContextManager** (*contextName=None*)

Bases: object

Prepare Application-Context and give the ability to access the Context through 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.

**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

**class** pyfloribotvision.manager.ProcessManager.**ProcessManager** (*pluginController, configController*)

Bases: object

Manages the Process and is responsible for the runtime behavior

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

Gets the 'GENERAL' section from the ConfigController and acquires and instantiates 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** ()

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)

**attachToDependencyIOList** (*para, dstList*)

**configParameter** = [<pyfloribotvision.types.StringListType.StringListType object at 0x3bfae10>, <pyfloribotvision

**executePlugins** (*pluginDtoList=None*)

**instantiatePlugins** (*pluginDtoList=None*)

Instantiate the Plugins in the list of PluginDto's

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

**logicSectionName** = 'GENERAL'

**registerDependency** (*pluginDtoList=None*)

**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)

## plugins Package

### plugins Package

#### BasePlugin Module

```
class pyfloribotvision.plugins.BasePlugin.BasePlugin (**kwargs)
```

Bases: object

**\_\_init\_\_** (\*\*kwargs)

**configParameter** = []

**externalCall** ()

**loadOptions** (*obj=None*)

**postCyclicCall** ()

**preCyclicCall** ()

**timeBypassActions** ()

## Subpackages

### bdv\_labor Package

#### bdv\_labor Package

#### CircleMarker Module

```
class pyfloribotvision.plugins.bdv_labor.CircleMarker.CircleMarker (**kwargs)
```

Bases: `pyfloribotvision.plugins.BasePlugin.BasePlugin`

**\_\_init\_\_** (\*\*kwargs)

**configParameter** = [`<pyfloribotvision.types.ImageType.ImageType object at 0x4b022d0>`, `<pyfloribotvision.types.`

**externalCall** ()

**preCyclicCall** ()

**Deconvolution Module**

```
class pyfloribotvision.plugins.bdv_labor.Deconvolution.Deconvolution (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    blur_edge (img, d=31)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x4b069d0>, <pyfloribotvision.types.N
    defocus_kernel (d, sz=65)
    externalCall ()
    preCyclicCall ()
```

**InvertImage Module**

```
class pyfloribotvision.plugins.bdv_labor.InvertImage.InvertImage (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4c95790>, <pyfloribotvision.types.N
    externalCall ()
```

**MSER Module**

```
class pyfloribotvision.plugins.bdv_labor.MSER.MSER (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4d466d0>, <pyfloribotvision.types.N
    externalCall ()
    preCyclicCall ()
```

**WeightChanel's Module**

```
class pyfloribotvision.plugins.bdv_labor.WeightChanel's.WeightChanel's (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x49b6910>, <pyfloribotvision.types.N
    externalCall ()
    preCyclicCall ()
```

**floribot Package****floribot Package****FilePickleSegmentOutput Module**

```
class pyfloribotvision.plugins.floribot.FilePickleSegmentOutput.FilePickleSegmentOutput (**
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    appendOutputDataToCache ()
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x46f5750>, <pyfloribotvision.types.N
    externalCall ()
```



```
postCyclicCall ()
preCyclicCall ()
writeCacheToFile ()
```

## kinect Package

## kinect Package

### DirectKinectSource Module

```
class pyfloribotvision.plugins.kinect.DirectKinectSource.DirectKinectSource (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.IntType.IntType object at 0x3c59350>, <pyfloribotvision.types.ImageType.ImageType object at 0x3c59350>]
    externalCall ()
```

## opencv Package

## opencv Package

### ApplyColorMap Module

```
class pyfloribotvision.plugins.opencv.ApplyColorMap.ApplyColorMap (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x33b16d0>, <pyfloribotvision.types.NameType.NameType object at 0x33b16d0>]
    externalCall ()
    obligatoryConfigOptions = {'inputImageName': None, 'outputImageName': None, 'colorMapCode': None}
    preCyclicCall ()
```

### CVBitwiseAnd Module

```
class pyfloribotvision.plugins.opencv.CVBitwiseAnd.CVBitwiseAnd (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x430f690>, <pyfloribotvision.types.ImageType.ImageType object at 0x430f690>]
    externalCall ()
```

### CVBitwiseOr Module

```
class pyfloribotvision.plugins.opencv.CVBitwiseOr.CVBitwiseOr (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x3c59510>, <pyfloribotvision.types.ImageType.ImageType object at 0x3c59510>]
    externalCall ()
```

**CVContourConstraint Module**

```
class pyfloribotvision.plugins.opencv.CVContourConstraint (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x33b1fd0>, <pyfloribotvision.types.N
    externalCall ()
    preCyclicCall ()
```

**CVDrawCicles Module**

```
class pyfloribotvision.plugins.opencv.CVDrawCicles (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    if inputContourIndexListName is empty, then draw all contours
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x33ba290>, <pyfloribotvision.types.N
    externalCall ()
```

**CVDrawContours Module**

```
class pyfloribotvision.plugins.opencv.CVDrawContours (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    if inputContourIndexListName is empty, then draw all contours
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x48ee290>, <pyfloribotvision.types.N
    drawText (image, text, xpos, ypos, scale=1, color=(225, 225, 225))
    drawTextMarker (image, text, xpos, ypos, radian, line, color=(225, 225, 225))
    externalCall ()
```

**CVFindContours Module**

```
class pyfloribotvision.plugins.opencv.CVFindContours (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x4e48290>, <pyfloribotvision.types.N
    externalCall ()
    preCyclicCall ()
```

**CVGaussBlur Module**

```
class pyfloribotvision.plugins.opencv.CVGaussBlur (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4e489d0>, <pyfloribotvision.types.N
    externalCall ()
```

**CVInRange Module**

```
class pyfloribotvision.plugins.opencv.CVInRange.CVInRange (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4e88e10>, <pyfloribotvision.types.
    externalCall ()
```

**CVMorphologyEx Module**

```
class pyfloribotvision.plugins.opencv.CVMorphologyEx.CVMorphologyEx (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringType.StringType object at 0x4eabc10>, <pyfloribotvision.types.
    externalCall ()
    preCyclicCall ()
```

**CVStructuringElement Module**

```
class pyfloribotvision.plugins.opencv.CVStructuringElement.CVStructuringElement (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringType.StringType object at 0x4eddf50>, <pyfloribotvision.types.
    externalCall ()
    preCyclicCall ()
```

**CVTransformColor Module**

```
class pyfloribotvision.plugins.opencv.CVTransformColor.CVTransformColor (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4f09b10>, <pyfloribotvision.types.
    externalCall ()
    preCyclicCall ()
```

**CVValueList Module**

```
class pyfloribotvision.plugins.opencv.CVValueList.CVValueList (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.IntNestedListType.IntNestedListType object at 0x4ec0690>, <pyflorib
    externalCall ()
```

**Canny Module**

```
class pyfloribotvision.plugins.opencv.Canny.Canny (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4f51310>, <pyfloribotvision.types.
    externalCall ()
```

**CreateContourBinaryImage Module**

```
class pyfloribotvision.plugins.opencv.CreateContourBinaryImage.CreateContourBinaryImage (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x4f09210>, <pyfloribotvision.types.N
    externalCall ()
```

**DirectCVCamSource Module**

```
class pyfloribotvision.plugins.opencv.DirectCVCamSource.DirectCVCamSource (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4fc72d0>, <pyfloribotvision.types.I
    externalCall ()
    initCam ()
    preCyclicCall ()
    timeBypassActions ()
```

**DirectCVImageSource Module**

```
class pyfloribotvision.plugins.opencv.DirectCVImageSource.DirectCVImageSource (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringType.StringType object at 0x3d749d0>, <pyfloribotvision.types.S
    externalCall ()
```

**DirectVideoSource Module**

```
class pyfloribotvision.plugins.opencv.DirectVideoSource.DirectVideoSource (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringType.StringType object at 0x3c5a210>, <pyfloribotvision.types.S
    externalCall ()
    initVideo ()
    preCyclicCall ()
```

**FileCVImageOutput Module**

```
class pyfloribotvision.plugins.opencv.FileCVImageOutput.FileCVImageOutput (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x3d2db10>, <pyfloribotvision.types.S
    externalCall ()
```

**FileVideoOutput Module**

```
class pyfloribotvision.plugins.opencv.FileVideoOutput.FileVideoOutput (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x4c75ad0>, <pyfloribotvision.types.S
    externalCall ()
    preCyclicCall ()
```

**HoughCircles Module**

```
class pyfloribotvision.plugins.opencv.HoughCircles.HoughCircles (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x43172d0>, <pyfloribotvision.types.S
    externalCall ()
```

**HuMoments Module**

```
class pyfloribotvision.plugins.opencv.HuMoments.HuMoments (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x4210210>, <pyfloribotvision.types.N
    externalCall ()
```

**Merge Module**

```
class pyfloribotvision.plugins.opencv.Merge.Merge (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageListType.ImageListType object at 0x4657c10>, <pyfloribotvision
    externalCall ()
```

**Moments Module**

```
class pyfloribotvision.plugins.opencv.Moments.Moments (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x42a3950>, <pyfloribotvision.types.N
    externalCall ()
```

**ScreenCVImageOutput Module**

```
class pyfloribotvision.plugins.opencv.ScreenCVImageOutput.ScreenCVImageOutput (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringListType.StringListType object at 0x4329110>]
    externalCall ()
```

**Threshold Module**

```
class pyfloribotvision.plugins.opencv.Threshold.Threshold (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x3d74390>, <pyfloribotvision.types.N
    externalCall ()
```

**Watershed Module**

```
class pyfloribotvision.plugins.opencv.Watershed.Watershed (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.NameType.NameType object at 0x3e0d390>, <pyfloribotvision.types.N
    externalCall ()
```

**python Package****python Package****DataToStdout Module**

```
class pyfloribotvision.plugins.python.DataToStdout.DataToStdout (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.StringListType.StringListType object at 0x42a3490>]
    externalCall ()
```

**DeltaTimePerFrame Module**

```
class pyfloribotvision.plugins.python.DeltaTimePerFrame.DeltaTimePerFrame (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.BoolType.BoolType object at 0x4657750>, <pyfloribotvision.types.Int7
    externalCall ()
    postCyclicCall ()
    preCyclicCall ()
    printTime (time)
```

**Histogram Module**

```
class pyfloribotvision.plugins.python.Histogram.Histogram (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x4b060d0>, <pyfloribotvision.types.N
    externalCall ()
```

## NewImage Module

```
class pyfloribotvision.plugins.python.NewImage.NewImage (**kwargs)
    Bases: pyfloribotvision.plugins.BasePlugin.BasePlugin
    __init__ (**kwargs)
    configParameter = [<pyfloribotvision.types.ImageType.ImageType object at 0x32b0f90>, <pyfloribotvision.types.
    externalCall ()
```

## ros Package

## ros Package

## types Package

## types Package

## BaseListType Module

```
class pyfloribotvision.types.BaseListType.BaseListType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name=None, **kwargs)
    dataUpdateCallback (name, data)
    invokeCallbacks (data)
    setDataValue (key, value)
    value
```

## BaseNestedListType Module

```
class pyfloribotvision.types.BaseNestedListType.BaseNestedListType (name=None,
                                                                    **kwargs)
    Bases: pyfloribotvision.types.BaseListType.BaseListType
    __init__ (name=None, **kwargs)
    value
```

## BaseType Module

```
class pyfloribotvision.types.BaseType.BaseType (name, **kwargs)
    Bases: object
    __init__ (name, **kwargs)
    checkConstraint (value)
    data
    dataUpdateCallback (name, data)
    getConvertedData (converter, *args)
    getConvertedValue (converter, *args)
    initLog ()
    invokeCallbacks (data)
```

```
registerDataUpdate (callback)
value
```

#### BoolType Module

```
class pyfloribotvision.types.BoolType.BoolType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name=None, **kwargs)
```

#### FloatType Module

```
class pyfloribotvision.types.FloatType.FloatType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name=None, **kwargs)
```

#### ImageListType Module

```
class pyfloribotvision.types.ImageListType.ImageListType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseListType.BaseListType
    __init__ (name=None, **kwargs)
```

#### ImageType Module

```
class pyfloribotvision.types.ImageType.ImageType (name, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name, **kwargs)
```

#### IntListType Module

```
class pyfloribotvision.types.IntListType.IntListType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseListType.BaseListType
    __init__ (name=None, **kwargs)
```

#### IntNestedListType Module

```
class pyfloribotvision.types.IntNestedListType.IntNestedListType (name=None,
                                                                    **kwargs)
    Bases: pyfloribotvision.types.BaseNestedListType.BaseNestedListType
    __init__ (name=None, **kwargs)
```

#### IntType Module

```
class pyfloribotvision.types.IntType.IntType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name=None, **kwargs)
```



**NameListType Module**

```
class pyfloribotvision.types.NameListType.NameListType (name=None, **kwargs)
    Bases: pyfloribotvision.types.BaseListType.BaseListType
    __init__ (name=None, **kwargs)
```

**NameType Module**

```
class pyfloribotvision.types.NameType.NameType (name, **kwargs)
    Bases: pyfloribotvision.types.StringType.StringType
    __init__ (name, **kwargs)
```

**StringListType Module**

```
class pyfloribotvision.types.StringListType.StringListType (name=None,
                                                                **kwargs)
    Bases: pyfloribotvision.types.BaseListType.BaseListType
    __init__ (name=None, **kwargs)
```

**StringNestedListType Module**

```
class pyfloribotvision.types.StringNestedListType.StringNestedListType (name=None,
                                                                              value=None)
    Bases: pyfloribotvision.types.BaseNestedListType.BaseNestedListType
    __init__ (name=None, value=None)
```

**StringType Module**

```
class pyfloribotvision.types.StringType.StringType (name, **kwargs)
    Bases: pyfloribotvision.types.BaseType.BaseType
    __init__ (name, **kwargs)
```



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