Qcorr: A Digital Image Correlation Program implemented in QT4

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7.1 ControlsWindow Class Reference

allows to modify parameters for the correlation operations, such as template size and scan interval. This class is a friend of Qcorr.

```
#include <src/controlswindow.h>
```

Public Member Functions

- ControlsWindow (Qcorr ∗parentWindow, QWidget ∗parent=0)

  Constructor of ControlsWindow class must point to a Qcorr parentWindow.

- ∼ControlsWindow ()

  Closes and Destroys itself.

- void setEnableSpinBoxes (bool bEnable)

  Enables/Disables control spinBoxes.

- int getScanInterval ()

  to obtain the scan Interval set in the spin box

- int getTemplateSize ()

  to obtain the template's size value (as width) set in the spin box

Private Slots

- void setScanInterval (int nValue)

  Q_SLOT that sets scan interval parameter in its friend Qcorr class according to the corresponding spinBox's value.

- void setTemplateSize (int nValue)

  Q_SLOT that sets template size parameter in its friend Qcorr class according to the corresponding spinBox's value.

Private Member Functions

- void createActions ()

  Create Signal-Slot connections.

- void updateParentStatusLabel ()

  Updates Parent's status bar with the corresponding values from the control spin boxes.

Private Attributes

- Ui::ControlsWindowClass ui

  The Qt GUI form for this class, so its widgets can be accessed and manipulated.

- Qcorr ∗ m_parentWindow

  Pointer to Main Window Object.

- int m_nScanInterval

  interval of scan traversal by the template

- int m_nTemplateSize

  the template's size (for the width)

7.1.1 Detailed Description

allows to modify parameters for the correlation operations, such as template size and scan interval. This class is a friend of Qcorr.

Definition at line 13 of file controlswindow.h.

7.1.2 Member Function Documentation

7.1.2.1 int ControlsWindow::getScanInterval () `[inline]`

to obtain the scan Interval set in the spin box

Returns:

the scan interval value (in pixels)

Definition at line 31 of file controlswindow.h.

References m_nScanInterval.

Referenced by Qcorr::disparity(), and Qcorr::updateStatusLabelWithDisparityInfo().

7.1.2.2 int ControlsWindow::getTemplateSize () `[inline]`

to obtain the template's size value (as width) set in the spin box

Returns:

the scan template's size value (in pixels)

Definition at line 41 of file controlswindow.h.

References m_nTemplateSize.

Referenced by Qcorr::disparity(), and Qcorr::updateStatusLabelWithDisparityInfo().

7.1.2.3 void ControlsWindow::setEnableSpinBoxes (bool *bEnable*)

Enables/Disables control spinBoxes.

Parameters:

bEnable boolean flag to enable or disable the spinBoxes for controlling correlation parameters of the Qcorr class Set enable spinBoxes including the maximum values based on the m_parentWindow's size of its right image

Definition at line 43 of file controlswindow.cpp.

References m_parentWindow, Qcorr::m_rightImage, and ui.

Referenced by Qcorr::changeMouse(), and ControlsWindow().

The documentation for this class was generated from the following files:

- src/controlswindow.h
- src/controlswindow.cpp

7.2 CorrMethod Class Reference

Dialog to select a method in which the correlation "template matching" operation will be based upon. The available correlation methods are the following:

- CROSS_CORR (cross correlation):

$$C(u,v) = \frac{\sum \{T(x,y) * I(x-u,y-v)\}}{\sqrt{\sum I(x-u,y-v)^2}}$$

- SUM_SQ_DIFF (sum of squared differences):

$$C(u,v) = \frac{\sum \{T(x,y) - I(x-u,y-v)\}^2}{\sqrt{\sum I(x-u,y-v)^2}}$$

- CORR_COEFF (correlation coefficient):

$$C(u,v) = \frac{\sum \{(T(x,y) - T_{avg}) * (I(x-u,y-v) - I_{avg})\}}{\sqrt{\sum (T(x,y) - T_{avg})^2 * \sum (I(x-u,y-v) - I_{avg})^2}}$$

.

```
#include <src/corrmethod.h>
```

Public Member Functions

- CorrMethod (QWidget *parent=0)

  Constructor for the CorrMethod class.

- int getMethod ()

  Retrieve the selected method to be used in the correlation process.

Private Slots

- void cancelMethod ()

  Q_SLOT to cancel the method selection dialog.

- void chooseMethod ()

  Q_SLOT to store the method selection from the dialog.

Private Attributes

- int m_nChosenMethod
- Ui::CorrMethodClass ui

  The Qt GUI form for this class, so its widgets can be accessed and manipulated.

7.2.1 Detailed Description

Dialog to select a method in which the correlation "template matching" operation will be based upon. The available correlation methods are the following:

- CROSS_CORR (cross correlation):
$$C(u,v) = \frac{\sum \{T(x,y) * I(x-u,y-v)\}}{\sqrt{\sum I(x-u,y-v)^2}}$$
- SUM_SQ_DIFF (sum of squared differences):
$$C(u,v) = \frac{\sum \{T(x,y) - I(x-u,y-v)\}^2}{\sqrt{\sum I(x-u,y-v)^2}}$$
- CORR_COEFF (correlation coefficient):
$$C(u,v) = \frac{\sum \{(T(x,y) - T_{avg}) * (I(x-u,y-v) - I_{avg})\}}{\sqrt{\sum (T(x,y) - T_{avg})^2 * \sum (I(x-u,y-v) - I_{avg})^2}}$$
.

Definition at line 30 of file corrmethod.h.

7.2.2 Member Function Documentation

7.2.2.1 int CorrMethod::getMethod ()

Retrieve the selected method to be used in the correlation process.

Returns the selected method in which the correlation "template matching" operation will be based upon. From the global enumeration MethodOfCorrelation, the available correlation methods are: N0_CORR_METHOD = 0, CROSS_CORR = 1, SUM_SQ_DIFF = 2, or CORR_COEFF = 3

Returns:

> selected correlation method (from global enumeration MethodOfCorrelation defined in globals.h). The available correlation methods are: N0_CORR_METHOD = 0, CROSS_CORR = 1, SUM_SQ_DIFF = 2, or CORR_COEFF = 3

Definition at line 22 of file corrmethod.cpp.

References m_nChosenMethod.

Referenced by Qcorr::correlate().

7.2.3 Member Data Documentation

7.2.3.1 int CorrMethod::m_nChosenMethod `[private]`

The selected method in which the correlation "template matching" operation will be based upon. From the global enumeration MethodOfCorrelation, the available correlation methods are: N0_CORR_METHOD = 0, CROSS_CORR = 1, SUM_SQ_DIFF = 2, or CORR_COEFF = 3

Definition at line 61 of file corrmethod.h.

Referenced by cancelMethod(), chooseMethod(), CorrMethod(), and getMethod().

The documentation for this class was generated from the following files:

- src/corrmethod.h
- src/corrmethod.cpp

7.3 ImgLabel Class Reference

A sub-classed label widget implemented with the purpose of displaying the reference image on the left panel.

```
#include <src/imgLabel.h>
```

Public Member Functions

- ImgLabel (Qcorr ∗parentWindow, QWidget ∗parent=0)

  Constructor of ImgLabel class must point to a Qcorr parentWindow.

- void setSelectable (bool bHasRubberBand)

  Allows to enable/disable the ImgLabel's rubberBand selection functionality.

Protected Member Functions

- void mousePressEvent (QMouseEvent ∗event)

  press mouse event handler

- void mouseMoveEvent (QMouseEvent ∗event)

  move mouse event handler

- void mouseReleaseEvent (QMouseEvent ∗event)

  release mouse event handler

Private Member Functions

- void setTemplateFlags (bool bStatus)

  Sets a group of flags used for the mouse pointer in relation to the template's region and edges.

- void checkTemplateRegions (int mouseX, int mouseY)

  Used to check the mouse pointer in relation to the template's region and edges.

- void displayCoordinatesOnStatusLabel (QPoint &point0, QPoint &point1)

  Displays the XY-coordinates of the mouse pointer on the status bar Displays the XY-coordinates of the mouse pointer (relative to the ImgLabel) in the status bar of the friend-parent's main window. It only display the mouse pointer coordinate information if rubberBand actions are enabled.

Private Attributes

- Qcorr ∗ m_parentWindow

  Pointer to Main Window Object (There should be only one on these).

- QRubberBand ∗ m_rubberBand

  the rubberBand object.

- QPoint m_originPoint

  rubberBand's top-left corner point

- QPoint m_finalPoint

  rubberBand's bottom-right corner point

- QPoint m_currentPressedPoint

  the coordinates of the current mouse pointer when it's pressed (held-down)

- QPoint m_labelUpperLeftCornerPoint

  Top-left corner of the label.

- QPoint m_labelLowerRightCornerPoint

  Bottom-right corner of the label.

- QPoint m_mousePosPoint1

  First mouse position point of the template selection.

- QPoint m_mousePosPoint2

  Final mouse position point of the template selection.

- bool m_bMouseIsPressed

  indicates whether the mouse is currently being pressed (held-down)

- bool m_bStartedTemplateSelection

  indicates whether the template selection has begun

- bool m_bMouseInTemplateRegion

  indicates whether the mouse pointer is inside the rubberBand selection area

- bool m_bMouseAtTemplateTopEdge

  indicates whether the mouse pointer is at the top edge of the rubberBand selection area

- bool m_bMouseAtTemplateBottomEdge

  indicates whether the mouse pointer is at the bottom edge of the rubberBand selection area

- bool m_bMouseAtTemplateLeftEdge

  indicates whether the mouse pointer is at the left edge of the rubberBand selection area

- bool m_bMouseAtTemplateRightEdge

  indicates whether the mouse pointer is at the right edge of the rubberBand selection area

- bool m_bHasRubberBand

  indicates whether the rubberBand is enabled/disabled.

- int m_nXNewPos

  X-value used in the rubberBand movement.

- int m_nYNewPos

  Y-value used in the rubberBand movement.

Friends

- class Qcorr

  Qcorr is a friend class of this ImgLabel class, so all members from ImgLabel are accessible by a Qcorr object.

7.3.1 Detailed Description

A sub-classed label widget implemented with the purpose of displaying the reference image on the left panel.

A sub-classed label widget implemented with the purpose of displaying the reference image on the left panel with added functionality such as the rubberBand selection and coordinate tracking of the mouse pointer.

Definition at line 25 of file imgLabel.h.

7.3.2 Member Function Documentation

7.3.2.1 void ImgLabel::checkTemplateRegions (int *mouseX*, int *mouseY*) `[private]`

Used to check the mouse pointer in relation to the template's region and edges.

Parameters:

mouseX X-coordinates of the mouse pointer

mouseY Y-coordinates of the mouse pointer

Definition at line 267 of file imgLabel.cpp.

References m_bMouseAtTemplateBottomEdge, m_bMouseAtTemplateLeftEdge, m_bMouseAtTemplateRightEdge, m_bMouseAtTemplateTopEdge, m_bMouseInTemplateRegion, m_finalPoint, m_originPoint, and setTemplateFlags().

Referenced by mouseMoveEvent(), and mouseReleaseEvent().

7.3.2.2 void ImgLabel::displayCoordinatesOnStatusLabel (QPoint & *point0*, QPoint & *point1*) `[private]`

Displays the XY-coordinates of the mouse pointer on the status bar Displays the XY-coordinates of the mouse pointer (relative to the ImgLabel) in the status bar of the friend-parent's main window. It only display the mouse pointer coordinate information if rubberBand actions are enabled.

Parameters:

point0 the coordinates of the origin point of the rubberBand selection

point1 the coordinates of the final point of the rubberBand selection

Definition at line 302 of file imgLabel.cpp.

References m_bHasRubberBand, m_parentWindow, and Qcorr::m_status_label.

Referenced by mouseMoveEvent().

7.3.2.3 void ImgLabel::setSelectable (bool *bHasRubberBand*)

Allows to enable/disable the ImgLabel's rubberBand selection functionality.

Parameters:

bHasRubberBand boolean flag to enable or disable the rubberBand selection functionality.

Definition at line 43 of file imgLabel.cpp.

References m_bHasRubberBand, and m_rubberBand.

Referenced by Qcorr::changeMouse(), and ImgLabel().

7.3.2.4 void ImgLabel::setTemplateFlags (bool *bStatus*) `[private]`

Sets a group of flags used for the mouse pointer in relation to the template's region and edges.

Parameters:

bStatus template region's status

Definition at line 257 of file imgLabel.cpp.

References m_bMouseAtTemplateBottomEdge, m_bMouseAtTemplateLeftEdge, m_bMouseAtTemplateRightEdge, m_bMouseAtTemplateTopEdge, and m_bMouseInTemplateRegion.

Referenced by checkTemplateRegions(), ImgLabel(), and mouseMoveEvent().

The documentation for this class was generated from the following files:

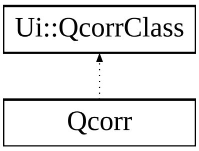
- src/imgLabel.h
- src/imgLabel.cpp

7.4 Qcorr Class Reference

A Digital Image Correlation Program (Template Matcher and Pixel Disparity Mapping) implemented in QT4.

```
#include <src/qcorr.h>
```

Inheritance diagram for Qcorr::



Public Member Functions

- Qcorr (QWidget ∗parent=0)

  Constructor of the Qcorr class.

- ∼Qcorr ()

  Destructor: House keeping that should be done when the Qcorr main window is closed – specifically, it closes the controlsWindow;.

Private Slots

- void closeWindows ()

  Q_SLOT that closes the main Qcorr window and the controls Window;.

- void showControlsWindow ()

  Q_SLOT that shows the controls window and raises it to the foreground if already open.

- void browseLeftImage ()

  Q_SLOT that allows to browse and load an image on the left panel.

- void browseRightImage ()

  Q_SLOT that allows to browse and load an image on the right panel.

- void changeMouse ()

  Q_SLOT used to change the mouse pointer according to the current operation mode.

- void viewMap ()

  Q_SLOT that selectively provides the appropriate existent map of results from correlation (template matching) or pixel disparity.

- void operate ()

  Q_SLOT that starts the chosen operation according to the mode chosen, either template matching or disparity finder.

- void abortOperation ()

  Q_SLOT triggers the flag to abort the current operation.

Private Member Functions

- void displayImage (QImage ∗image, QLabel ∗label)

  Displays any QImage on a Qlabel.

- void displayImageLabel (QImage ∗image, ImgLabel ∗label)

  Displays the reference image on the left panel's label. which is a sub-classed widget.

- void createActions ()

  Sets up actions and Q_SIGNAL-Q_SLOT connections.

- void setEnableActions (bool bEnable)

  Enables/Disables operation modes actions related widgets.

- void setImageLabels ()

  Instantiates label widgets and initializes other member variables pertinent to the overall GUI functionality of the main window itself.

- void showEStop ()

  emergency stop to abort the disparity operation process

- void correlate ()

  Performs template matching through correlation of the selected template against the target image. It calls findCorrelation() with the appropriate parameters to do a single template correlation across the entire target image.

- void disparity ()

  Pixel-disparity finding operation. It should be mainly be used with stereo images that can get correlated row-by-row by using findCorrelation() with the pertinent parameters and the appropriate Q_SLOT function implementation.

- float findCorrelation (const unsigned char ∗imgTarget, const int nWI, const int nHI, const int nDepthI, const unsigned char ∗imgTemplate, const int nWT, const int nHT, const int nDepthT, int &rnDx, int &rnDy, int nMethod, bool bMultires=false, int nInitialXPosition=0, int nInitialYPosition=0, int nNumberOfRows=0)

  Cross-correlation of target image with template image.

- float ∗ convertToGrayScaleFloat (const unsigned char ∗pchImgOriginalBits, int nSize, int nDepth)

  Cast images to an 8-bit gray-scale channel of type float.

- void updateStatusLabelWithDisparityInfo ()

  Updates Status Bar with Information about parameters for the disparity operation.

- bool fileDumpQImage (const QString &fileName)

  Used for testing and investing the bits stored in QImages or other Qt Widgets.

Private Attributes

- int m_nXCorrelationCoordinate

  the resulting x-coordinate match obtained from correlation of a template against a target

- int m_nYCorrelationCoordinate

  the resulting y-coordinate match obtained from correlation of a template against a target

- CorrMethod ∗ m_corrMethodDialog

  Dialog Box to choose a correlation method.

- ControlsWindow ∗ m_controlsWindow

  Dialog Box to modify correlation parameters such as template size and scan interval.

- QString initialName

  String that saves the path for the first file image that has been loaded.

- QImage ∗ m_leftImage

  Left Panel's Image (a.k.a. "reference image" when performing template matching through correlation).

- QImage ∗ m_rightImage

  Right Panel's Image (a.k.a "target image").

- QImage ∗ m_templateImage

  Template Image that is selected from the reference image (in the left panel) that will be matched against.

- QImage ∗ m_corrMapImage

  Correlation Map resulting from the Template Matching action.

- QImage ∗ m_disparityMapImage

  Disparity Map that results from the pixel disparities found between the left and right images.

- ImgLabel ∗ m_leftImage_label

  label used to display the left image. This is sub-classed widget implemented with the functionality of allowing template selection by a rectangular rubber-band

- TargetImgLabel ∗ m_targetImage_label

  a sub-classed label widget implemented with the purpose of displaying the target image in the right panel with added functionality such as the visualization of the found match

- QLabel ∗ m_status_label

  status label that updates the mouse-pointer's position coordinates as it moves and selects templates. It also provides other types of information when required.

- QVector< QRgb > ∗ m_grayColorTab

  8-bit gray-scale color table

- QVector< QRgb > ∗ m_greenColorTab

  8-bit green-scale color table

- QPoint m_matchingPoint

upper-left corner point where the correlation match was found

- QSize m_templateSize

  the current template's size as a QSize object

- QActionGroup ∗ modes_actionGroup

  group of menu actions for the mode of operation.

- QDialogButtonBox ∗ m_eStopDialog

  A dialogue to stop the current correlation process.

- bool m_bHasLeftImage

  indicates that an image is loaded in the left panel

- bool m_bHasRightImage

  indicates that an image is loaded in the right panel

- bool m_bHasCorrMap

  indicates that a correlation map exists

- bool m_bHasDisparityMap

  indicates that a disparity map exists

- bool m_bEstop

  emergency stop for the

- int m_nScanInterval

  interval of scan traversal by the template

Friends

- class ImgLabel

  the ImgLabel class is a friend of Qcorr in order to make all members of Qcorr accessible by an ImgLabel object

- class ControlsWindow

  allows to modify parameters for the correlation operations, such as template size and scan interval. This class is a friend of Qcorr.

7.4.1 Detailed Description

A Digital Image Correlation Program (Template Matcher and Pixel Disparity Mapping) implemented in QT4.

This class combines all other sub-classed QWidgets implemented throughout the program. The main correlation (template matching) functionality is implemented in this class through the procedure convertToGrayScaleFloat()

Note:

Correlation is performed on gray-scale (1 channel image) that are computed in this procedure through the convertToGrayScaleFloat() function.

Compile-time dependencies

- The QT4 Framework
- g++

Bug

- Perhaps a few around the rubberBand functionality, and others not noticed yet.

Todo

- Use pyramids method for faster correlation
- Better disparity map implementation
- Spacebar opens full screen mode on image.

Authors:

Carlos Jaramillo
Joel Gonzalez

Definition at line 52 of file qcorr.h.

7.4.2 Member Function Documentation

7.4.2.1 float ∗ Qcorr::convertToGrayScaleFloat (const unsigned char ∗ *pchImgOriginalBits*, int *nSize*, int *nDepth*) `[private]`

Cast images to an 8-bit gray-scale channel of type float.

Parameters:

pchImgOriginalBits Buffer of unsigned characters as the source image

nSize Number of pixels in the source image

nDepth Pixel depth of the source image

Returns:

the correlation number computed by method (directly). Additionally, the (dx,dy) offset of the template for which there exists a best match.

Definition at line 1257 of file qcorr.cpp.

Referenced by findCorrelation().

7.4.2.2 void Qcorr::displayImage (QImage ∗ *image*, QLabel ∗ *label*) `[private]`

Displays any QImage on a Qlabel.

Parameters:

image Pointer to a QImage instance

label Pointer to a QLabel instance

Definition at line 1240 of file qcorr.cpp.

7.4.2.3 void Qcorr::displayImageLabel (QImage ∗ *image*, ImgLabel ∗ *label*) [private]

Displays the reference image on the left panel's label. which is a sub-classed widget.

Parameters:

image Pointer to a QImage instance

label Pointer to a ImgLabel class instance

Definition at line 1247 of file qcorr.cpp.

References ImgLabel::m_labelLowerRightCornerPoint.

Referenced by browseLeftImage().

7.4.2.4 bool Qcorr::fileDumpQImage (const QString & *fileName*) [private]

Used for testing and investing the bits stored in QImages or other Qt Widgets.

Parameters:

fileName a QString reference to the file-name as which the raw bits will be storedpchImgOriginalBits Buffer of unsigned characters as the source image

Returns:

true if the bits were properly dumped to the specified fileName

Definition at line 1314 of file qcorr.cpp.

References m_rightImage.

7.4.2.5 float Qcorr::findCorrelation (const unsigned char ∗ *imgTarget*, const int *nWI*, const int *nHI*, const int *nDepthI*, const unsigned char ∗ *imgTemplate*, const int *nWT*, const int *nHT*, const int *nDepthT*, int & *rnDx*, int & *rnDy*, int *nMethod*, bool *bMultires* = false, int *nInitialXPosition* = 0, int *nInitialYPosition* = 0, int *nNumberOfRows* = 0) [private]

Cross-correlation of target image with template image.

Note:

Correlation is performed on gray-scale (1 channel image) that are computed in this procedure through the convertToGrayScaleFloat() function.

Parameters:

imgTarget Buffer of unsigned characters containing the target image where correlation match is to be found

nWI Width of target image

nHI Height of target image

nDepthI Pixel depth of target image

imgTemplate Buffer of unsigned characters containing the template image

nWT Width of target image

nHT Height of target image

nDepthT Pixel depth of target image

rnDx x-coordinate where the highest level of correlation match is found (top-left corner of the match)

rnDy y-coordinate where the highest level of correlation match is found (top-left corner of the match)

nMethod Determines the selected method to be used in the correlation process. The method is a globally defined enumeration. The available methods are:

- CROSS_CORR (cross correlation):

$$C(u,v) = \frac{\sum \{T(x,y) * I(x-u,y-v)\}}{\sqrt{\sum I(x-u,y-v)^2}}$$

- SUM_SQ_DIFF (sum of squared differences):

$$C(u,v) = \frac{\sum \{T(x,y) - I(x-u,y-v)\}^2}{\sqrt{\sum I(x-u,y-v)^2}}$$

- CORR_COEFF (correlation coefficient):

$$C(u,v) = \frac{\sum \{(T(x,y) - T_{avg}) * (I(x-u,y-v) - I_{avg})\}}{\sqrt{\sum (T(x,y) - T_{avg})^2 * \sum (I(x-u,y-v) - I_{avg})^2}}$$

Remark: The square root of the sum of the squares (RSS) is being used to calculate the aggregate accuracy of a measurement when the accuracies of the all the measuring devices are known. The average accuracy is not merely the arithmetic average of the accuracies (or uncertainties), nor is it the sum of them. Note how the RSS result in this case is greater than the largest of the values under the radical.

bMultires Determines if multiresolution correlation should be applied, by making use of image pyramids. With multiresoltion, the correlation can be determined faster than direct correlation. Default is false.

nInitialXPosition Indicates the x-coordinate of the pixel on the target image where correlation should start. Default is 0

nInitialYPosition Indicates the y-coordinate of the pixel on the target image where correlation should start. Default is 0

nNumberOfRows Indicates the number of rows on the target image to be scanned. Default is 0, which means all of them.

Returns:

a float array resulting from the conversion of the source image into an 8-bit gray-scale image.

Definition at line 609 of file qcorr.cpp.

References convertToGrayScaleFloat(), m_bEstop, m_corrMapImage, and m_grayColorTab.

Referenced by correlate(), and disparity().

7.4.2.6 void Qcorr::setEnableActions (bool *bEnable*) `[private]`

Enables/Disables operation modes actions related widgets.

Parameters:

bEnable boolean flag to enable or disable the operation mode's actions widgets as well as the related widgets such as, start_pushButton and controls_pushButton

Definition at line 167 of file qcorr.cpp.

References changeMouse().

Referenced by browseLeftImage(), and browseRightImage().

7.4.3 Friends And Related Function Documentation

7.4.3.1 friend class ControlsWindow `[friend]`

allows to modify parameters for the correlation operations, such as template size and scan interval. This class is a friend of Qcorr.

ControlsWindow

Definition at line 87 of file qcorr.h.

Referenced by setImageLabels().

7.4.3.2 friend class ImgLabel `[friend]`

the ImgLabel class is a friend of Qcorr in order to make all members of Qcorr accessible by an ImgLabel object

ImgLabel

Definition at line 82 of file qcorr.h.

Referenced by setImageLabels().

The documentation for this class was generated from the following files:

- src/qcorr.h
- src/qcorr.cpp

7.5 TargetImgLabel Class Reference

A sub-classed label widget implemented with the purpose of displaying the target image on the right panel.

`#include <src/targetImgLabel.h>`

Public Member Functions

- TargetImgLabel (QWidget ∗parent=0)

  Constructor for the TargetImgLabel class.

- void setImage (const QImage &labelImage)

  Sets background image on this TargetImgLabel class.

- void overlayImage (const QImage &otherImage, int nXoffset=0, int nYoffset=0)

  Overlays an Image ontop of the current one.

- void drawEnclosedMatch (const QPoint originPoint, const QSize rectSize)

  Draws a dashed, green rectangle to indicate the position of a matching template on the target image.

- void eraseEnclosedMatch ()

  Erases the green rectangle that indicated a matching template on the target image.

Protected Member Functions

- void paintEvent (QPaintEvent ∗)

  Handles the paint events by refreshing/updating the contents of this TargetImgLabel class.

Private Attributes

- QImage ∗ m_image

  the right image (a.k.a target image)

- QImage ∗ m_overlayImage

  the overlaid correlation map image

- QPoint m_originPoint

  the point that indicates the top-left coordinates of the matching rectangle

- QSize m_rectSize

  the size of the enclosing match rectangle

- int m_nXoffset

  X offset for overlay image.

- int m_nYoffset

  Y offset for overlay image.

- bool m_bHasCorrResults

    indicates whether correlation results exist so an overlaid image can be composed on top of the target image

- bool m_bHasImage

    indicates whether this TargetImgLabel class has a target (main) image

- bool m_bHasOverlayImage

    indicates whether this TargetImgLabel class has an overlaid image (Usually, a correlation results map)

7.5.1 Detailed Description

A sub-classed label widget implemented with the purpose of displaying the target image on the right panel.

A sub-classed label widget implemented with the purpose of displaying the target image in the right panel with added functionality such as the enclosing match visualization and overlaid correlation map images

Definition at line 23 of file targetImgLabel.h.

7.5.2 Member Function Documentation

7.5.2.1 void TargetImgLabel::drawEnclosedMatch (const QPoint *originPoint*, const QSize *rectSize*)

Draws a dashed, green rectangle to indicate the position of a matching template on the target image.

Parameters:

originPoint A QPoint that indicates the top-left coordinates of the matching rectangle

rectSize A QSize for the matching rectangle to be drawn

Definition at line 99 of file targetImgLabel.cpp.

References m_bHasCorrResults, m_originPoint, and m_rectSize.

Referenced by Qcorr::correlate(), and Qcorr::disparity().

7.5.2.2 void TargetImgLabel::overlayImage (const QImage & *otherImage*, int *nXoffset* = 0, int *nYoffset* = 0)

Overlays an Image ontop of the current one.

Parameters:

otherImage Pointer to a QImage instance that will overlay the current one using Qt::CompositionMode_Screen mode

nXoffset X offset for overlay image. Default is 0

nYoffset Y offset for overlay image. Default is 0

Definition at line 37 of file targetImgLabel.cpp.

References m_bHasOverlayImage, m_nXoffset, m_nYoffset, and m_overlayImage.

Referenced by Qcorr::viewMap().

7.5.2.3 void TargetImgLabel::setImage (const QImage & *labelImage*)

Sets background image on this TargetImgLabel class.

Parameters:

labelImage Pointer to a QImage instance that will be used as the label's background

Definition at line 26 of file targetImgLabel.cpp.

References m_bHasImage, m_bHasOverlayImage, and m_image.

Referenced by Qcorr::browseRightImage(), Qcorr::changeMouse(), Qcorr::correlate(), and Qcorr::viewMap().

The documentation for this class was generated from the following files:

- src/targetImgLabel.h
- src/targetImgLabel.cpp

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