Render Attached Dicom image in a QtOpenGLWidget Control

In the project Attached, the used type of Widgets are QTOpenGlWidget,QWidget with a file dialog to choose the image wanted to be rendered.

OpenGl commands are used to clear buffers to make the changes made to the images in the UI, rendered more fast.

QMenu is used to choose the between Zoom in, Zoom out , Increase or Decrease brightness and contrast. Also the user have the ability to move the image inside the opengl widget.

Qt Related techniques used:

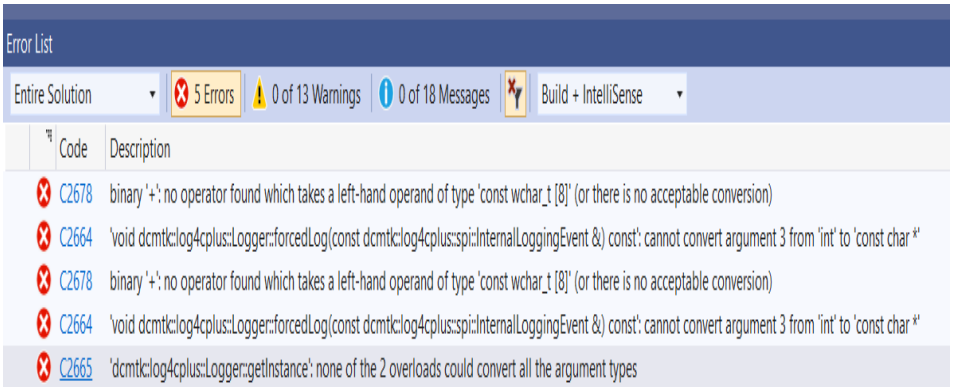
- QtOpenGlWiget
- QWidget
- QPainter
- QImage
- QFileDialog
- QToolbar
- QColor
- QPixel

Opengl related Commands used:

- Commands related to initializing (e.g glClear, glLoadIdentity,glViewport,....).

Drawbacks

Dcmtk:
After using cmake to Create DCMTK project files. The simple test which read the dicom file only doesn't work correctly, giving this error.



Opencv:

for brightness and contrast opencvif the best ibrary for doing image processing but There was a problem in using cmake for creating the librares to be included in the C++ , For this problem, Equations of brightness and contrast are used:
For inc. brightness to calculate new pixel value:

$$f(i,j)_{new} = f(i,j) + B$$

For Dec use minus sign instead of plus one;
for Contrast evaluation Michelson contrast is used:

$$\frac{I_{max} - I_{min}}{I_{max} + I_{min}}$$

and if this ratio ==1 , a value of 2 is become the contrast factor.

All the previously image processing technques takes some time because of looping on the images.