Clock Face Detection - User Manual

This manual will shortly explain the user interface and design of the enclosed software.

The User Interface

None of the controls existing in the provided framework has been removed and their functionality has not changed in any way visible to the user. However, several controls have been added to make the framework more flexible and easier to work with. First of these is a combo box, from which one can select any algorithm provided by the software. In this case, these are the example of inverting the image, as well as the actual newly implemented algorithm to detect clock faces, the latter being selected by default.

Further, there are two check boxes. One of them asks the applied algorithm to show intermediate steps in the right side of the window, while the other asks the algorithm to not only output the result but also intermediate steps. The latter can be particularly useful for debugging and testing purposes.

For the algorithm to be able to output more than one image there is a second combo box, to which several images may be added. The user can, after the algorithm has finished its work, select the different output images to view or save. When not in debug mode, the provided algorithm outputs two bitmaps, the first includes each detected clock face in a different grey value on black background, and the second is a copy of the input image, with each pixel not belonging to a detected clock face masked to black. The latter is selected by default.

Finally, there is also a button to clear the output combo box, as it can become quite cluttered after applying the algorithm to several images, especially in debug mode.

The Software Design

As the above paragraphs suggest, it is easy to add new algorithms to the software. Further, to implement the clock face detection algorithm, several other classes for faster and easier image processing have been created. These include for example classes to handle bitmap data significantly faster than provided by .Net bitmaps, as well as classes allowing for easy morphological and other operations. For specifics, please refer to the comments in the provided source code.