# Contents



# 1 Acknowledgement

This application currently relies on the FFMPEG libraries for fundamental processing of video files as provided by the Accord.NET distribution. Specifically the dlls Accord.dll, Accord.Video.dll and Accord.Video.FFMPEG.dll.

# 2 Introduction

This is a manual for the installation and use of the application ‘Artist’. The program is a Windows application, for creating attractive images from an image, particularly a photograph by manipulating the pixels in a way which is related to the contours of colour on the original image. The combinations and possible colours and effects are almost unlimited. It is also possible to alter all the pixels in each individual frame of a video in the same way.

As an example of the things you can do look at the before and after images of this picture:

**Figure 1 - Before amendment.**

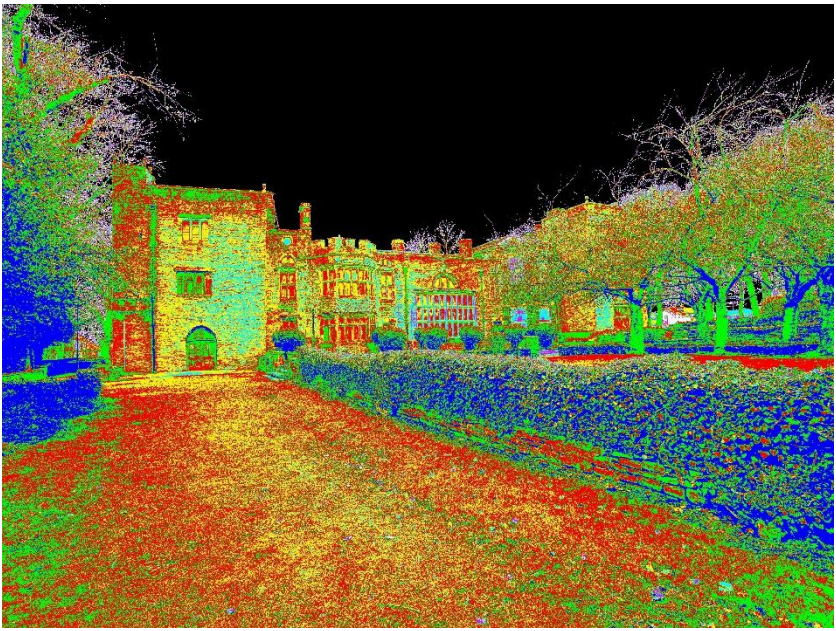


**Figure 2 After amendment with this program.**

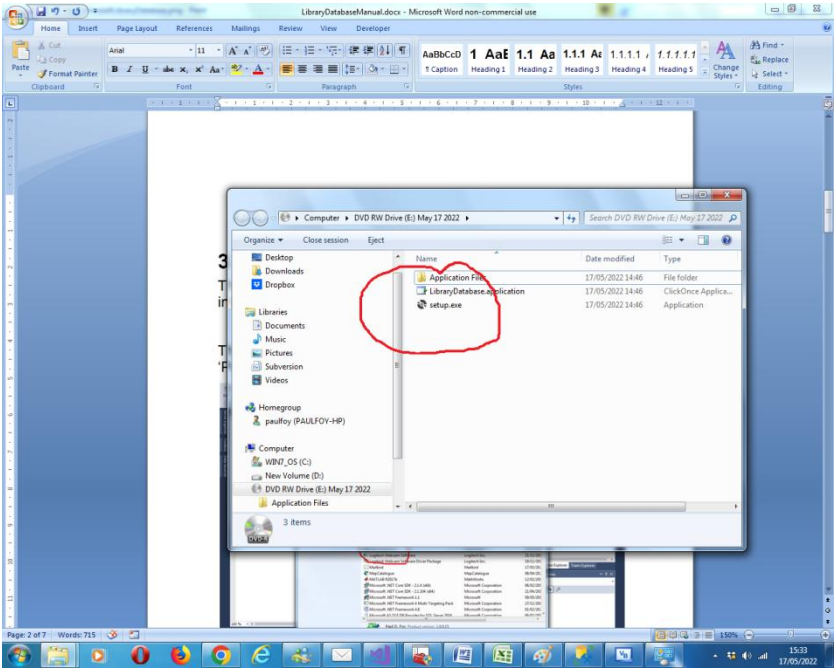
# 3 Pre-requisites.

1. A PC running Windows 7 or above.

2. A USB stick or optical drive containing the program setup files, together with this manual (available online).

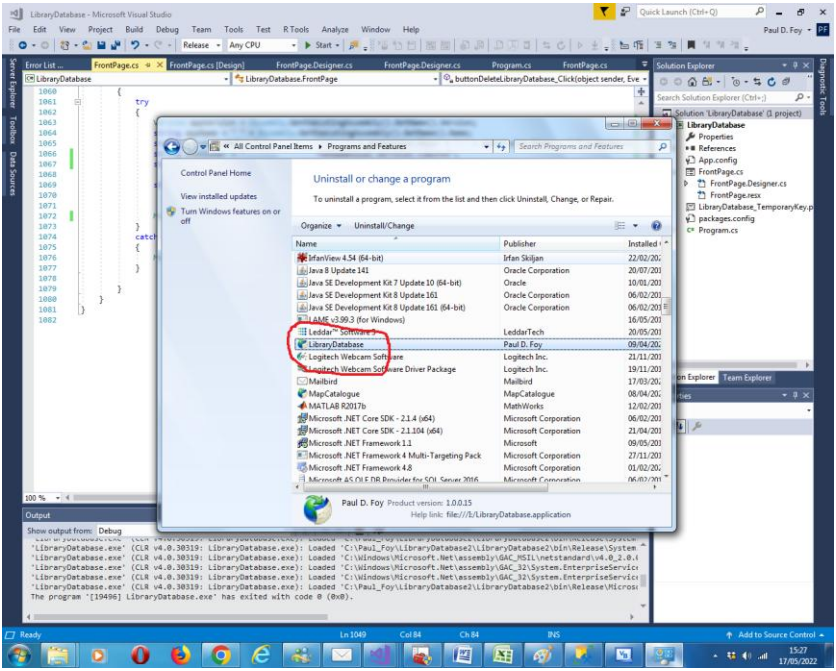
# 4 Installation/Removal

The program is installed by inserting the supplied stick or disc into the PC and running the ‘setup.exe’ program on it.




The program can be removed from the PC, by using the ‘Program & Features’ menu from within Control Panel.

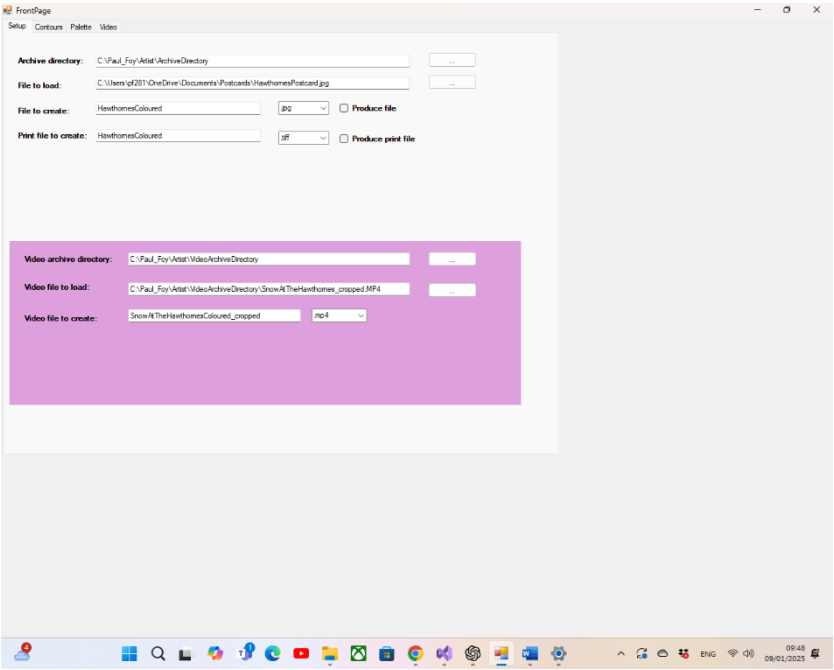
The program is robust to erroneous parameter input, but not completely fool proof.


LibraryDatabase - Microsoft Visual Studio
Uninstall or change a program
To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.
Control Panel Home
View installed updates
Turn Windows features on or off
Organize
Uninstall/Change
Name
Publisher
LibraryDatabase
Paul D. Foy
Logitech Webcam Software
Logitech Inc.
Mailbird
MapCatalogue
MATLAB R2017b
MathWorks
Microsoft .NET Core SDK - 2.1.4 (x64)
Microsoft .NET Framework 4 Multi-Targeting Pack
Microsoft .NET Framework 4.8
Solution Explorer
Output
Ready

# 5 Artist

The application has 4 tabs:

## 5.1 Setup




### 5.1.1 Pictures

The text box **Archive directory** is the directory where files created will be saved. This must be selected before the application will function.

The text box **File to load** is the file that the amendment is based upon.

The text box **File to create** is the name (without filetype) of the created image. The permitted filetypes are as selected by the

adjacent combo box. The file is only created on the hard disk if the check box **Produce file** is checked. The possible file types that can be selected are .jpg,.png, and .bmp.

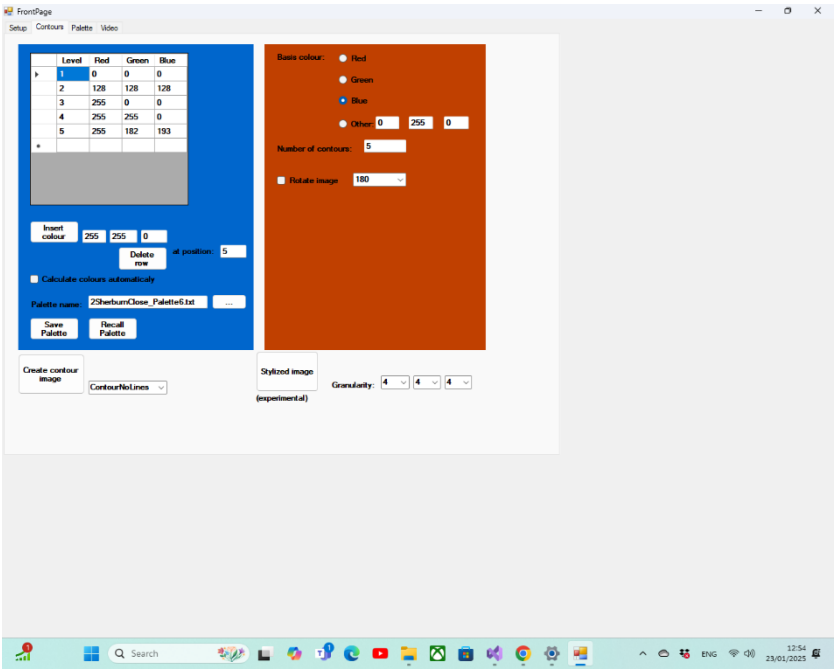
The text box **Print file to create** contains the name of a .tiff file that will be created using the CMYK colour space suitable for physical printing. The file will only be produced if the check box **Produce print file** is selected. A version of the file suitable for printing can only be created if a disk file (see previous text box) has been created.

### 5.1.2 Video

The lower panel contains settings for manipulating videos.

The text box **Video archive directory** contains the archive directory for videos loaded and created. The **video file to load** text box contains a video file to be loaded into the application. The **Video file to create** text box contains the name of a file to create. The file type is selected by the right-hand combo box.

## 5.2 Contours




This tab permits you to configure the amendment to be made. The **Number of contours** or colour levels is provided by this text box. Each pixel is examined to determine its intensity of hue (a number from 0 to 255), according as the **Basis colour** is **Red**, **Green, Blue** or another provided colour (as selected). This number is then used as a basis to re-colour the pixel (according to the levels of colour determined by the **Number of contours**). You can either provide the levels of colour by supplying RGB values in the left-hand flex grid (the default) or if the check box **Calculate colours automatically** is selected according to the algorithm embedded in the application. This latter algorithm does not accept a bespoke colour (‘Other’ radio button.

The check box **Rotate image**, rotates the image before processing it either left or right according to the combo box selection.

The button **Create contour image** applies the configured amendment and saves it to the **File to create** with the selected extension in the selected **Archive directory**. The image is also saved in the picture box of the Palette tab for easy reference along with the width and height (in pixels) of the original (and new) image.

For example set the number of contours to two and give two RGB values of (0,0,0) and (255,255,255) respectively - a black and white depiction of the scene will be created.

Some useful RGB colours are:

Red - (255,0,0)

Green - (0,255,0)

Blue - (0,0,255)

Yellow - (255,255,0)

Magenta - (255,0,255)

Cyan - (0,255,255)

White - (255,255,255)

Grey – (128, 128, 128)

Brown – (150,75,0)

Black - (0,0,0)

When colours are provided in the left-hand flex-grid:

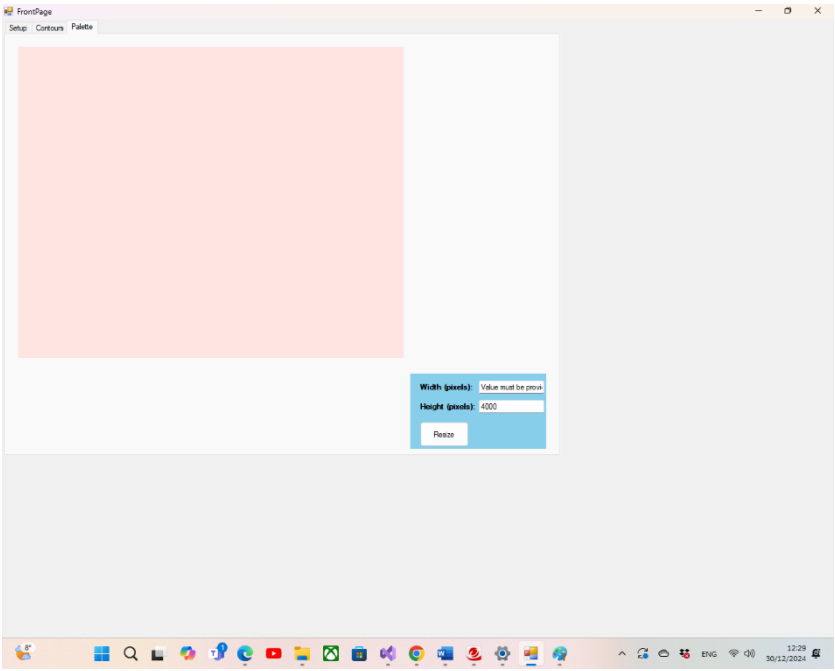
When the number of contours is set to $n$, level $i, 1 \leq i \leq n$, has integer value $l(i) = i * 255/n$, when comparing to the value of the basis colour of the image's pixel - $b$, when establishing which colour from the flex grid to employ. The colour selected is

the one corresponding to the minimum value of $i$ such that $l(i) \geq b$. If no such $i$ exists, the colour corresponding to level $n$ is selected. When the other radio button is selected $b$ is $((c_R - b_R) + (c_G - b_G) + (c_B - b_B))/3$, where $c$ is the user provided colour and $b$ is the *pixel* under consideration.

To help you organise the colour palette you may insert a given colour (RGB values to supply) at the given position (as given by the label in column 1) using the **Insert colour** button. You may delete a row at the given position using the **Delete row** button. For convenience the contents of the Flex grid may be saved in a palette, using the **Save Palette** button. The file supplied must be a .txt file. A previously saved palette may be recalled using the **Recall Palette** button.

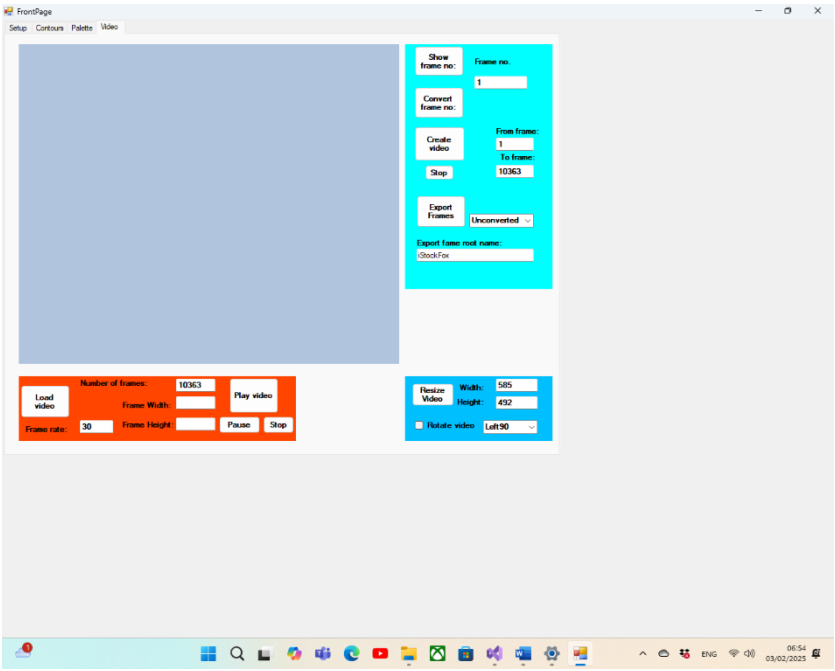
The **Stylized image** button is an experimental technique for producing a stylized (rounded, more cartoon like, like a gif) image from a photograph. The **granularity**, for each colour red, blue and green respectively, determines the number of levels (with their corresponding colour) that each of the primary colours will be divided into. For example setting Red, Green and Blue to (2,2,2) permits 8 possible colours with each of the primary colours either absent (0) or the full colour (255).

## 5.3 Palette




This tab contains a picture box control for receiving the created image. The image may be resized with a new or original size by using the **Width (pixels)**, **Height (pixels)** text boxes and **Resize** button.

## 5.4 Video




This panel contains control for loading a video and then amending each frame with a colouring and associated parameters as prescribed in the ‘Contours’ tab, including the rotate check box.

The button **Load video** loads the video from disc and populates the parameters of the video, **Frame rate**, **Frame Width**, **Frame Height** and **Number of frames** into the corresponding text box. It is the possible to play the video using the **Play video** button, from fame **from Frame** to frame **To frame**. The video is displayed in the picture box. The video can be stopped or paused (then resumed) with the **Stop** and **Resume** buttons respectively. It is not possible to use the scroll bars (if present) whilst the video is playing. You will probably prefer to use a 3rd

party player for previewing your work as this will give more flexibility.

An individual frame can be displayed using the **Show frame no.** button. This can also be viewed after conversion with the **Convert frame no.** button. A video is converted with the colours as described in tab ‘Contours’ with the **Create video** button. Frame numbers **From frame** to **To frame** are converted. The result is the video with a name as supplied in the ‘Setup’ tab residing in the video archive directory. For a long file this can take a considerable time. So the conversion process can be stopped with the **Stop** button below the **Create video** button. To preview this converted video it can be loaded back into this application.

Use the **Export Frames** button to save all the individual frames between **From frame** and **To frame** into individual bitmaps (.bmp). The frames are saved in the **Video archive directory** with a root filename as provided in the Export frame root name textbox. The frames may be either before or after conversion according to the selection made.

The frames of the video can be rotated, left or right, or by 180 degrees, before playing or processing with the **Rotate video** checkbox.

The size of the frames within the picture box control can be altered with the **Width** and **Heigh**t text boxes and the **Resize Video** button. Note it is not possible to use the scroll bars of the picture box control whilst the video is playing.

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