**Applied Maths and Graphics Functional Checklist for your Graphics Application (year 2021-2022)**

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Please place an “x” in the **Exists**? column if the feature is included in your submission. If accessing the feature is not completely obvious, please add comments in the **Access Tips** column. Please do not edit the Conf column

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| --- | --- | --- | --- | --- | --- |
| Rough Mark Category | Feature category: Images | Relevant Unit on NOW | Exists? | Access Tips | Conf |
| 3rd | Load and show image from file using basic Processing | 1,3 | X | The user can click on the “load file” button. This image will then be loaded into the application. Clicking on the “Image” button will then allow the user to drag the image size to the desired dimensions. |  |
| 3rd- Mid 2.2 | Basic RGB manipulation of image – e.g. convert a colour image to a black-and-white or greyscale versions of the image | 1,2,3 | X | The user can click on the “Grayscale button” which changes the select image into a grayscale format. NOTE: An image must be loaded and drawn before any photo manipulation can take place. An extra button also switches the red and green values of an image. This was manipulated from a previous lab. |  |
| Mid 2.2- High 2.1 | Implement separate input and output image, so images can be manipulated and returned to their original state | 3 | x | Input images can be loaded in via File Dialogues. Image processing is applied by using the LUT tables and the output can be saved. Due to the input and being output being separate. Clicking on the “Undo” button will return the image back to their original state. |  |
| Mid 2.2-High 2.1 | Implement own Point Functions such as brighten/contrast/invert to manipulate image. More marks for using LUTs. | 4 | x | The effect menu can be changed to allow for the image to be brightened/darkened/contrast and negative. This uses a LUT table found in the GraphicsApplication processing tab |  |
| Low 2.1-Low 1st | Implement own convolution filters to blur, sharpen and find edges | 6 | x | NOTE: This has been attempted. I have used the exemplars from the lab to try and use a convolution filter to manipulate an image. So far, I only have one image being manipulated. Only the Gaussian Blur works and only manipulates part of the image. Smaller images are fully manipulated though. |  |
| Low 1st- Mid 1st | Implement image as a “live shape” object (Can have multiple images, each can be placed, selected for process, moved and deleted) | 9 | X | NOTE: This has been attempted. Multiple images can be drawn into the canvas, and they can be deleted as well. More time will be needed to ensure that images can be moved around as well. |  |
|  | Feature category: Drawing Shapes |  |  |  |  |
| 3rd- Mid 2.2 | Drawing a single shape or “dead” shapes (which cannot be further manipulated) via a single mouse click to place the shape. | 1, 7 | X | These dead shapes are no longer useful due to the live shapes being created. I had a dead shapes button previously but the lives shape button is a more effective. |  |
| Mid2.2-High2.1 | Dragging shapes to their correct size upon creation | 8 | x | The user can click and drag using the buttons to draw a specific shape to a specific size. |  |
| Mid 2.2-High 2.1 | Implementing a “Drawing List” to show many shapes simultaneously.  I.e. Achieve “live shapes”. More marks for different shape types. | 8 | x | I have a drawing list class which displays all the different shapes. The Drawing List consists of a Rectangle, Ellipse and Line. More shapes will be added in the future. |  |
| Mid 2.2-High 2.1 | “Live shapes” – Selecting and Deleting | 8 | X | To select and delete a Live Shape, the user must press on the “select” button. Once a shape is selected, it will appear red. Pressing on the “Backspace” key will delete the selected image. |  |
| Mid 2.1-Low 1st | “Live shapes” - Set Fill colour, line colour and/or line-weight. More marks for ability to set each shape to a different colour/line weight. | Self-directed |  |  |  |
| 1st | “Live shapes” - Moving a previously drawn shape with the mouse | Self-directed |  |  |  |
| 1st | Draw open polyline with mouse | Self-directed |  |  |  |
| Low 1st – Mid 1st | Draw and close a polyline with mouse which then becomes a polygon that can be filled | Self-directed |  |  |  |
| 1st – Mid 1st | Drawing Bezier or Catmull-Rom Curves of any type with some degree of control | Self-directed |  |  |  |
|  | Feature category: User Interface |  |  |  |  |
| 3rd- Mid 2.2 | Basic use of Graphical User Interface buttons to do various actions (process image), mainly adapted from the given examples. | 5 | X | User buttons have been used of the SimpleUI examples. They are laid out in an easy-to-use manner on the left-hand side of the canvas. |  |
| Mid 2.2-High 2.1 | Loading and saving image via user interface and file dialogues. | 5 | X | File Dialogues allow the user to load and save files. Any image type can be loaded in for example (jpg and png). Saving the files produces a tif file. |  |
| Mid 2.2-1st | Sophisticated use of User Interface Elements showing independent design beyond those of the given examples. Ease of use taken into consideration. | 5,9 + Self-directed | X | Although I have used existing code. I have arranged added in new buttons which were not given in the labs. In the future I would like to add an external GUI Library to add improved UI elements |  |
| 1st | Use of own colour picker to set line and fill colour of shapes. | 9 + Self-directed |  |  |  |
|  | Stretch Goals  These are only suggestions… add your own if you think they are sufficiently advanced features |  |  |  |  |
| 1st+ | Extra Image processing operations outside of taught content – e.g. Change Hue, Saturation of image using own RGB-HSV conversion. | Self-directed |  |  |  |
| 1st+ | Drawing - The use of “handles” on shapes to scale | Self-directed |  |  |  |
| 1st + | Saving the state of the drawing/images for later reload. | Self-directed |  |  |  |
| Others?  You suggest them. |  | Self-directed |  |  |  |

**For tutor use only**

**Overall mark:**

**Feedback Comments:**