

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

**Design Document for Dynamic Parking Project: User Manual Display Controller**

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**ELEC 491**

**Themes: Transportation, Community, Wellbeing**

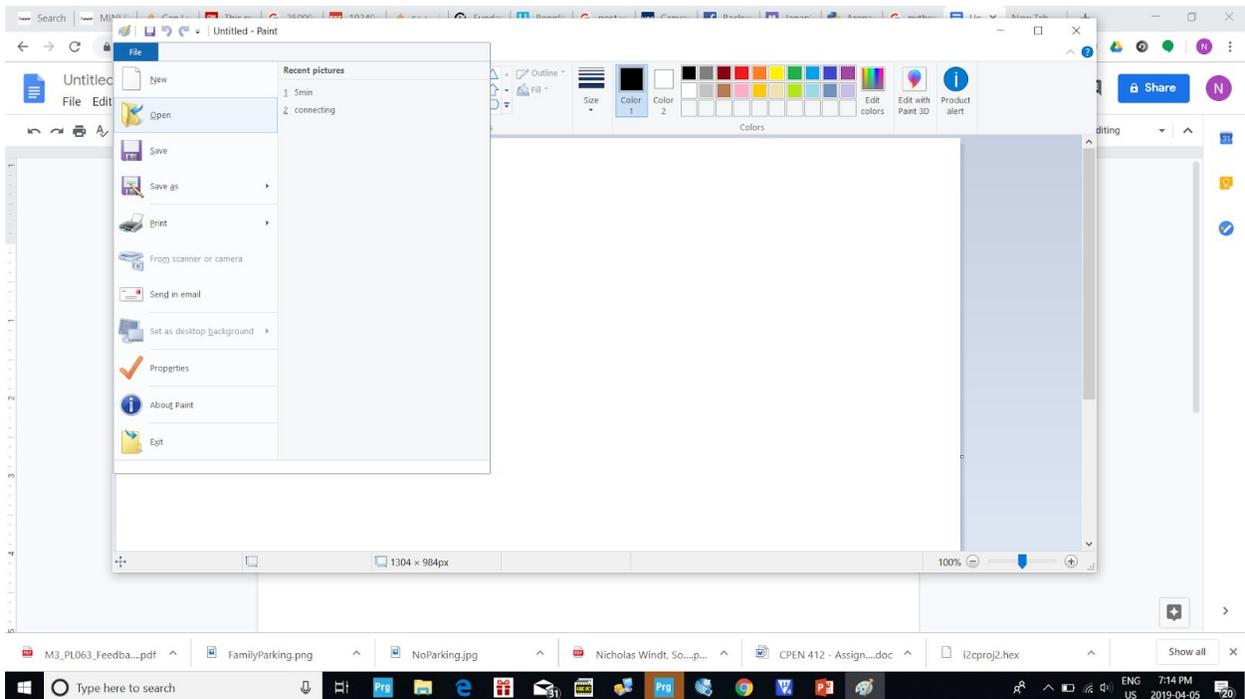
**April 4, 2019**

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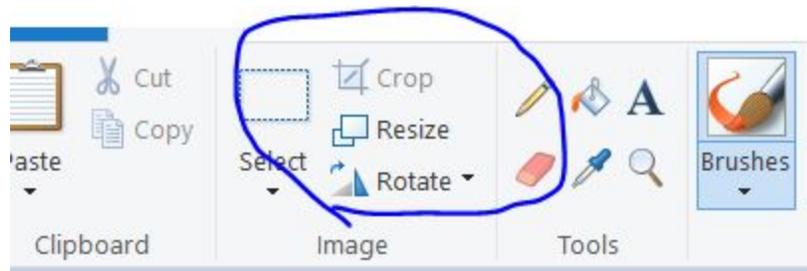
# How To Load Images

## Creating Images Compatible with the Display on Windows

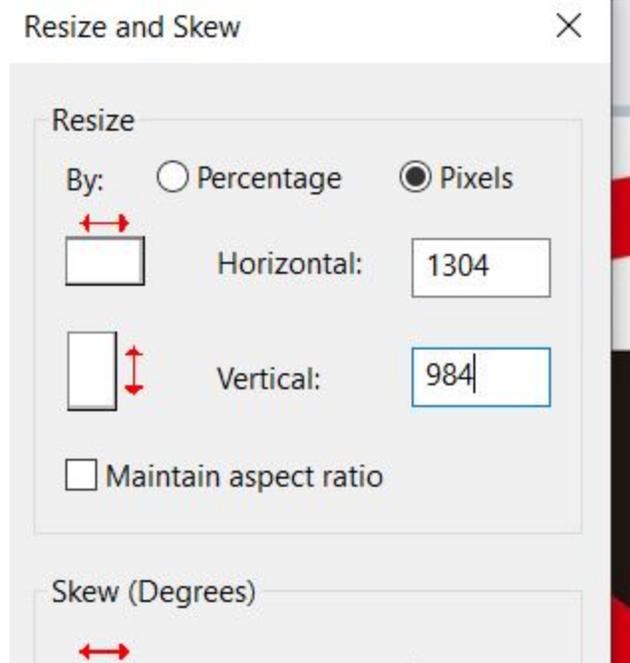
1. Open microsoft paint.
2. Import the image you would like to load to the display.



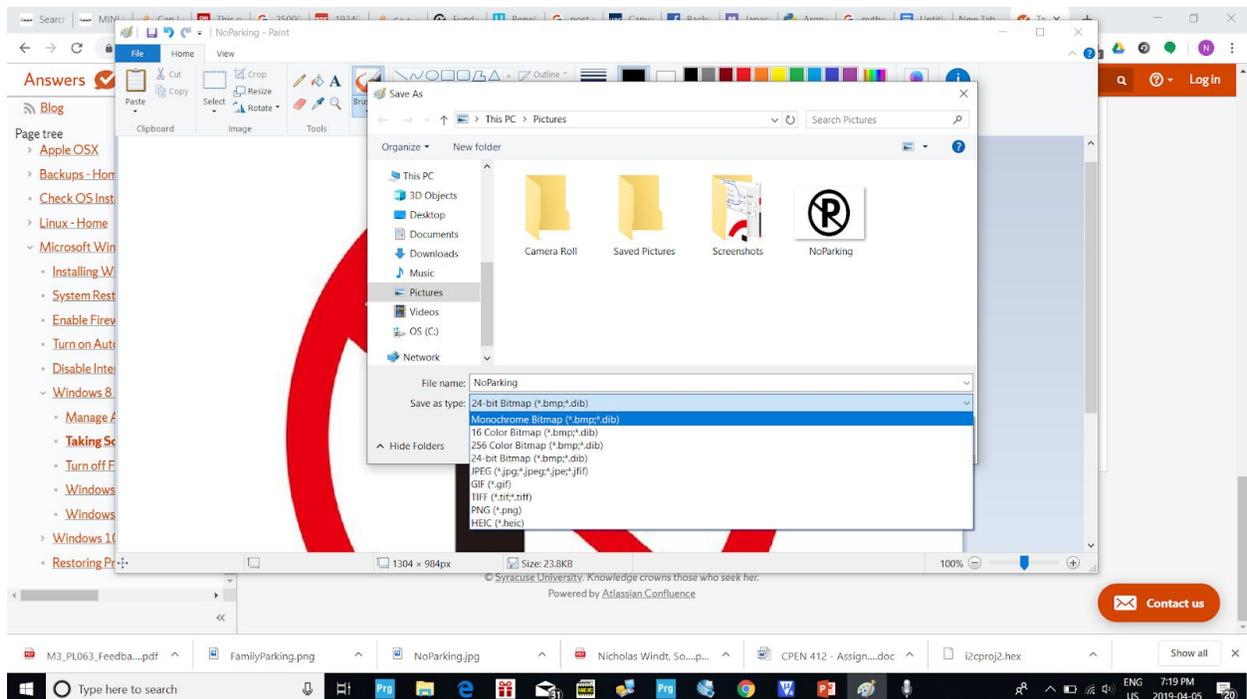
3. Click resize image.



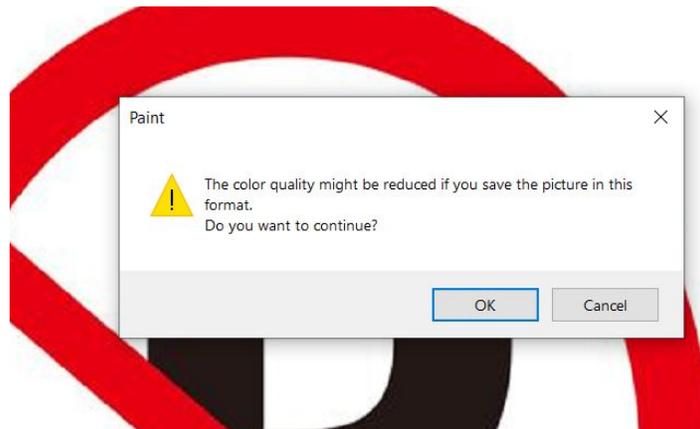
4. A pop up window to resize the window will appear, set the horizontal component to 1304 and vertical component to 984. Make sure to uncheck maintain aspect ratio.



5. Now save the image as a BMP to a folder where you are storing all the image for the display, save the image as a Monochrome Bitmap.

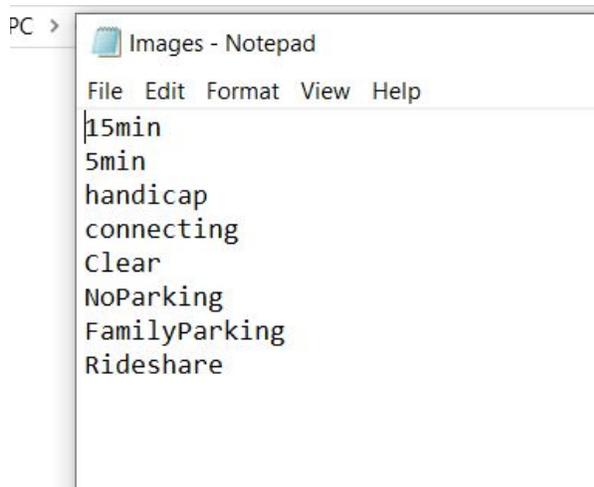


6. You will get a warning saying the image will lose colour quality, this is fine as we are converting the image to be just black and white.



## Loading Images

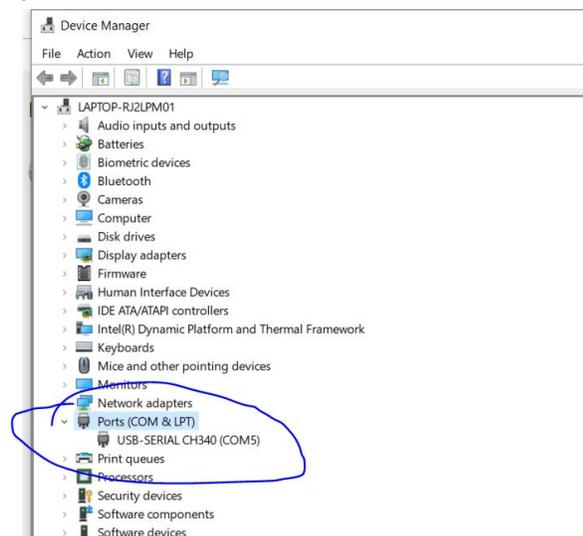
1. Prepare a folder with all the images you would like to load to your device, also in this folder create a list of the images name, without the file extension (.bmp), separate each image name with a new line.



2. Open up the display device and disconnect the main circuit from the battery. Then connect a USB cable to the DESPI-M02 board, ensure switch on the board is flipped to on.



3. Check what com port the device is connected to write by opening device manager and checking under ports



4. Open the `send_image.py` script in a text editor, update *ImageDirectory*, *image file* and *com port* at the top of the file.

*ImageDirectory*, should be the full path to the folder location of the images on you would like to load to the device, put a double backslash between locations as in the image below.

*ImagesFile*, should be the name of the file which you listed the images you would like to load note, this should be in the same directory as your images.

*Com*, Set this to the com port you just looked up.

```
1 import serial
2 import os
3 import imageio
4 import numpy
5
6 ImageDirectory = "C:\\Capstone\\Images"
7 ImagesFile = "Images.txt"
8 com = "COM5"
9
10 extension = ".bmp"
11
12 print("HELLO")
```

5. In order to run the script you need to have python 2.7 installed, additionally you might need to add packages for numpy and serial, do this using pip.

6. Go to the folder where the `send_image.py` is in a command terminal, enter, *python send\_image.py*. This will start the script, if you re loading several images it could take over 20 minutes for it to finish

```
PS C:\Capstone\SerialScript> python .\send_image.py
```

## Limitations

1. If you want to add an image/images to ones already loaded on the device you need to reload all images, ones already on the device as well as the new ones you would like to order.
2. The letter/number images need to be loaded on the device to display serial plate number these need to be loaded only once and do not need to be reloaded when images are added to the device.
3. The device is currently programed to only hold 20 images, (not including the letters or numbers).