Lab 6: Generating .mif files from images

EEL 4712 – Spring 2013

Overview:

This document is a Read Me for the MATLAB code which can be used to convert 24bit color image files to 12bit color .mif files.

Required tools and parts:

MATLAB (available on the ECE cluster).

Usage:

The VGA interface built in Lab 6 can be used to display any image provided the image data can be converted to 12 bit color and written to a .mif file. The file brom.mif provided for the lab has all possible colors in counting order. Hence, when interpreted correctly, it should show the following 64x64 image on the monitor screen.



Figure 1. Image generated by displaying brom.mif

The file brom128.mif should display a 128x128 image that should look like:



Figure 2. Image generated by displaying brom128.mif

To generate .mif files from images, save the images as any 24 bit color format (.jpg, .bmp, .png). Open MATLAB and change the 'Current Folder' to the location where miffilegen.m file is stored. Now on the MATLAB console type in:

```
[outfname, rows, cols] = miffilegen(infile, outfname, numrows, numcols)
eg:[outfname, rows, cols] = miffilegen('xyz.jpg', 'brom.mif', 128, 128)
eg:[outfname, rows, cols] = miffilegen('xyz.jpg', 'brom.mif', NaN, 128)
eg:[outfname, rows, cols] = miffilegen('xyz.jpg', 'brom.mif', 128, NaN)
```

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The function outputs the re-scaled resolution in rows and cols and the output file name. If either numrows or numcols is set to NaN then the output resolution is adjusted to maintain the original aspect ratio.

Shown below is a 1024x1024 image:



Figure 2. 1024x1024 Image large.jpg

If we run the following code snippet on the MATLAB console, the output brom.mif file is generated.

[outfname, rows, cols] = miffilegen('large.jpg', 'brom.mif', 128, 128)

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When the brom.mif is displayed using the VGA interface, we get the following image.



Figure 3. 128x128 Image generated from brom.mif

As the resolution and the color depth is being reduced, there are some aliasing and quantization artifacts. But the image is still recognizable.

Note: If any file exists with the same name as 'outfname', the code will attempt to overwrite the existing file.