Pic2Mag

Version 1.3 by Michael Snyder 08/27/2016

You draw virtual magnets and Pic2Mag draws the fields! (tm)

Usage : pic2mag myfile.png or pic2mag myfile.png z

Pic2mag.exe and your 640x640 pixel png file should be in the same folder. Start a command prompt, change directory to the folder with your files, and enter pic2mag myfile.png

Where z is the distance in millimeters away from the magnetic surface in a range between -1000 and 1000 millimeters; and the default distance is 3 mm

Pic2Mag uses colors in a graphics file to represent magnetic materials with different magnetic moments.(tm) The program looks for certain RGB values in the png file and when it finds the exact match the program plots the pixel as a permanent magnet with a defined magnetic moment angle. Different colors have different magnetic moment angles. More pixels take more time to process.

You can edit your png file in any graphics editor. I did the program testing with mspaint. Set your picture size to 640x640 and edit the colors to match the listed RGB colors. See the included mspaintcolors.png as an example of setting up the colors in mspaint. Pic2Mag expects colored objects on a white background.

'pic2mag myfile.png' produces five output files.

The first one is called contours and is a isopotential plot of the vector field energies. This is similar to a topographical map but using a repeating sequence of red, green and blue lines.

The second one is called streamlines and it is the streamline plot of the vector field. The streamlines are plotted as compass needles with yellow and purple markings. The compass needles map the direction of the magnetic fields.

The last three files called i_vector, j_vector, and k_vector are the vector field data of permanent magnets. The calculation of the vectors are accurate and use an physical constant of 1. The vector field data is processed internally with non-scaled units and a person would need to scale the vector fields in order to fit the vector fields to a real world system with a few measurements.

You can load these vector data files in other programs. For example in matlab

```
load myfile0000_i_vector.txt
load myfile0000_j_vector.txt
load myfile0000_k_vector.txt
```

Then use the matlab gui to change the 2d array names to ivector,jvector,kvector

```
test=sqrt(ivector.*ivector+jvector.*jvector+kvector.*kvector);
contour(log(test),100);
```

The Freeware version accepts 640 pixel by 640 pixel png files where each pixel is a 1mm cube of permanent magnet and then generates the vector field 3mm above the plane. It is free for everyone and everybody to use.

For example in a school lab where each student creates his or her own png file and then plots out the vector fields of their own magnetic system. The Pic2Mag command line executable is a 32 bit PC program and should run on most windows systems from Windows NT to Windows 10. It would not be difficult to setup batch files to run pic2mag from a windows icon.

The Pic2Mag Pro version accepts 1600 by 1600 pixel png files and can be ordered for $29.95 by emailing snyder1michael@hotmail.com

The Pic2Mag Cuda version is coming in the spring of 2017 and produces 3d cubes of vector field data with arbitrary shaped magnets defined by STL files and user defined magnetic moment angles in 3d space.

If you like my program, please donate a dollar to **https://www.paypal.me/metamirror/1** or mail a dollar to Michael Snyder, 1294 old soldiers crk rd, kirksey ky 42054

Every dollar helps make more programs like this program available to the public.

Clock Color Spin Vectors(tm) on a White Background (255 255 255)

XY Plane Color RGB values

12:00 oclock light yellow	**(255 255 128)**
1:30 oclock orange	**(255 128 000)**
3:00 oclock aqua	**(000 255 255)**
4:30 oclock purple	**(128 000 255)**
6:00 oclock dark green	**(000 128 064)**
7:30 oclock brown	**(128 064 000)**
9:00 oclock green	**(000 255 000)**
10:30 oclock lavender	**(255 128 255)**
blue z axis into page south	**(000 000 255)**
red z axis out of page north	**(255 000 000)**
pink monopole source	**(255 000 128)**
dark purple monopole sink	**(128 000 128)**

pink and dark purple can be used for electric field modeling