Notes
Engauge Digitizer

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Abstract

These notes are mainly taken from:
http://digitizer.sourceforge.net/usermanual/index.html

Engauge Digitizer is a software to digitize graphed data from text books and published papers, which means that it extracts data from graphs/images.
Just import an image, define three coordinate points and their scales, pick off the points and export the digitized data to a file.

Key features:

- The definition of 3 axes allows the software to correct for rotation or uniform skrew in the graph.

- You can specify whether the data is in linear or log scales.

- You can define multiple "curves" to help segregate data.

1 INSTALLATION

Command line:
```
sudo apt-get install engauge-digitizer
```

2 GENERAL STEPS

Typical Steps:

1. Obtain image file (bmp, jpeg or other) showing one or more curves and both axes;

2. Import image file using either:
   - File/Import menu option;
   - Copy-Paste;
   - Drag and drop;

3. Click on `Axes Point` button.

4. Click on click on one of the axes and enter graph coordinates.
   Repeat until you've added all axes;

5. Digitize graph according to subsections below.

6. Click on the `Curve Points` button to manually enter curve points by clicking on the curve. Repeat until the curve is covered with a sufficient number of curve points.

7. Export curve points by using either:
   - File/Export menu option to save selected curves into a tabular text file, or
   - copy-pase / drag-drop points in the current curve from mthe `curve geometry window` to another application.
   - Copy-Paste;
   - Drag and drop;

2.1 DIGITIZE LINE GRAPHS

1. Click on the `Segment Fill` button to automatically digitize entire curve segments at a time. Click on a segment underneath the cursor to fill that segment with a set of curve points. Repeat until the segment have been digitized.

2.2 DIGITIZE POINT GRAPHS

1. Click on the `Point Match` button to automatically digitize many curve points.

2. Click on a sample point and use the arrow keys to accept or reject points that match the sample point.

3 OPTIONAL STEPS

To clean up image for better eprformance of Segment Fill and Point Match:

1. Show processed image rather than original image, by selecting the `View/Processed Image` menu option

2. Use `Settings/Discretize` menu option to adjust and remove unwanted parts of image.

3. Remove grid lines using `Settings/Grid Removal` menu option.

For logarithmic or polar graph:

1. Select `Settings/Coords` menu option to bring up the *coordinates window* and select the appropriate co-ordinate settings.

For a graph with several curves

1. Select `Settings/Curves` menu option to bring up the *coordinates window*.

2. Click on the `New` button to create a new curve and enter its name.

3. Reapeat until all curve nemes have been entered.

4. In the main window, use the Curves combobox to select a curve. While selected, all new curve points will be assigned to that curve.

4   MISCELLANEOUS

For **Measuring Angles, Distances and Areas** you need to bring up the curve and measure geometry window. You can bring it up through the `View/Cuvrve Geometry Info` menu option.

Better Accuracy. The points are only as accurate as the pixel size (you can see that accuracy in the sattus bar). If the distance in graph units from one piel to the next is D, then theoretically the best possible accuracy is also D. It is not possible to define points that are "between" pixels, even by zooming in closer. That is a constraint imposed by the graphcs library that is used in *Engauge Digitizer*.

Fortunately, there are some tricks to improve the accuracy. Here, in order of increasing difficulty:

1. If the axis points are not correctly defined then fix them.

2. Turn on the grid lines by selecting `View/Gridlines Display` and compare them to grid lines in the original image, to see if the axis points can be slightly adjusted so the grid lines better match each other.

3. Use a graphics application like Microsoft Paint(windows) or GIMP (Linux) to scale up the original in size, such that each pixel is smaller, giving better accurary. The larger image is them imported (can be perfomred using the command line and the powerful ImageMagick tool).