



# Vector Graphics

SLQ Wiki Fabrication Lab 2024/04/25 22:32

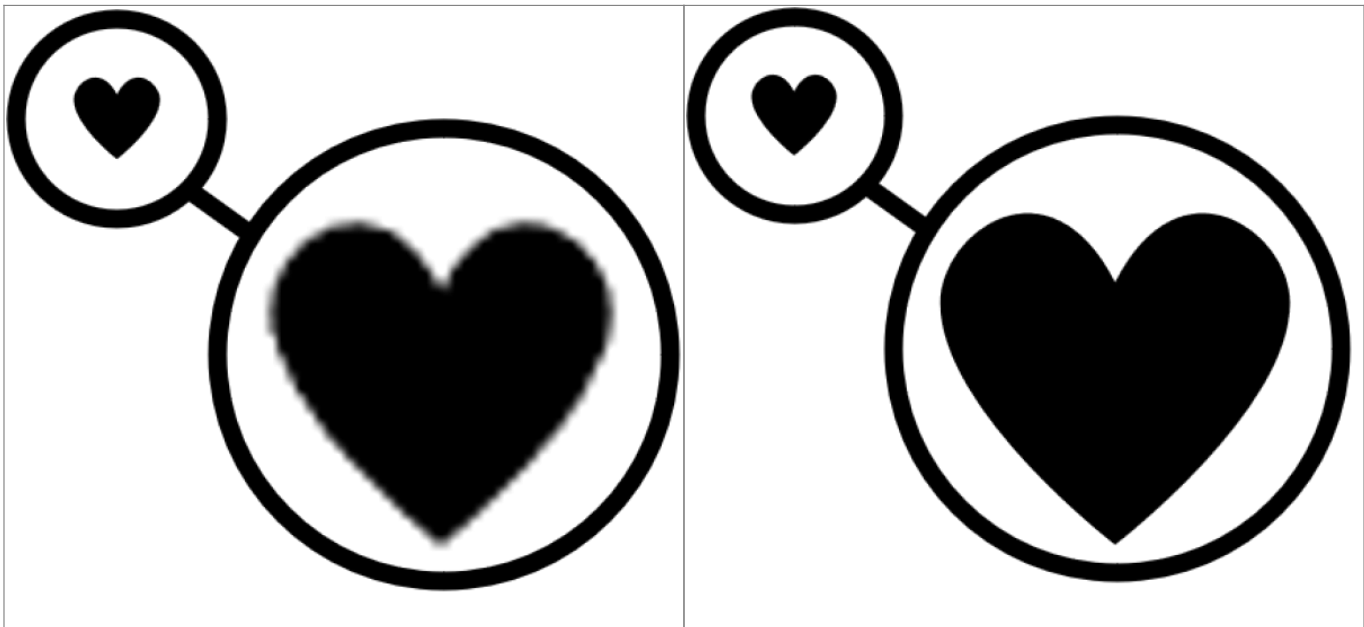
# Vector Graphics

Vector graphics are highly utilized in the field of graphic design and also form the foundational step of many of many digital fabrication workflows such as; laser cutting, CNC routing, vinyl cutting, and even (to some extent) 3D printing.

Being able to make good vector graphics allows you to put hand-drawn (or ideated) ideas into the computer in a format that can be read and used by these technologies, thus it is an extremely useful skill for any maker to have in their toolkit!

## Vector vs Raster/ Bitmap

Vector graphics aren't like a photo.

	
Raster/Bitmap	Vector
A raster image (for example a photo taken on a digital camera) is made up of thousands of little squares of colour called little pixels. If you take a raster image and stretch it to be larger than its original size it will 'pixelate' and lose quality.	Whereas in vectors we can make our image as big or small as we like and it will never lose the crisp lines, this is because vectors are not made of pixels, instead they are made up of lines described by mathematical equations (thankfully we don't need to know the maths, the computer works that out for us!).

Because vectors are made of maths it is possible for various digital fabrication technologies to interpret this image and work out how to reproduce it in real life.

## File Types

Vectors come in a broad category of digital file types, but the standard ones used in digital fabrication include; SVG, DXF and some forms of PDF. These are the file formats you export from the software you're using to make your vectors. Usually the software used by digital fabrication technologies will be able to read at least one of these file types, and it's good practice to export your file as all three kinds when you're preparing a file that you wish to bring into the fabrication lab just in case one file

export doesn't work quite right.

## Software options

Some of the most common Vector softwares used for digital fabrication are listed below.

Here you will find various info on getting started with various pieces of vector software. Remember that you have access to [Linda.com](#) which has a wide array of learning as part of your SLQ membership.

You also can come in during our [Open Lab](#) and [Hack the Evening](#) times to get hands on help, and these softwares are also covered in relevant [inductions](#) and [workshops](#).



Inkscape

**Price:** Free! (and Open Source!) **Best Suited To:** general purpose, graphic design & digital fabrication **Less Suited To:** n/a very well rounded software with lots of extensions for different purposes. [wiki page](#) [linda.com guides](#) [community](#)



Illustrator

**Price:** Expensive, but available at The Edge Digital Media and Fabrication Labs **Best Suited To:** graphic design **Less Suited To:** digital fabrication [wiki page](#) [linda.com](#) [guides](#) [community](#)



CorelDRAW

**Price:** Expensive, but available at The Edge Fabrication Lab **Best Suited To:** graphic design and preparing files for laser cutting **Less Suited To:** n/a [wiki page](#) [linda.com guides](#) [community](#) test text



Fusion 360

**Price:** Free version available for hobbyists by downloading trial and when it expires selecting hobbyist **Best Suited To:** parametric design (things that need accurate dimensions) and 3D objects that need to be assembled. **Less Suited To:** graphic design, no options for colours and strokes etc. [wiki page](#) [linda.com guides](#) [community](#)



VCarve

**Price:** Free version available at home, but through fabrication lab **Best Suited To:** Creating and preparing vectors for CNC milling **Less Suited To:** graphic design, no options for colours and strokes etc. [wiki page](#) [guides](#) [community](#)

## See Also

If you want to check out how each of these pieces of software fit into the overall workflows of our equipment, check out the [Induction](#) for that equipment.

## Special techniques

Here we have collected a few tutorials for common or interesting workflows:

- Scanned/**hand-drawing to vector** automatic conversion in [Inkscape](#) or [Illustrator](#). This works best for 'organic' shapes that don't need dimensions or accuracy.
- [Single Line fonts](#) allow you to really quickly laser etch text (using score settings) or cut neat text on a CNC router.
- Where to find free, creative commons, public domain images:
  - Wikipedia
  - Archive.org (check the licensing/ year of production)
  - [ArtVee](#)
  - [Public Domain Review](#)
  - [Flickr Commons](#)
- You can use AI to increase the resolution of images. Examples of such software include [DeepAI](#)