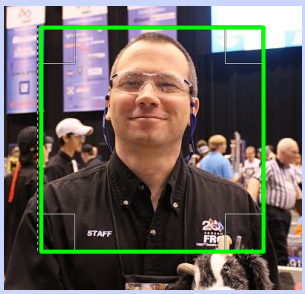
SECTION 1-1

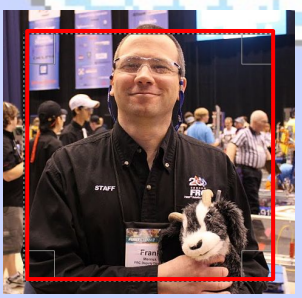
FIRST® POWER UP(SM) PIXEL ICON GUIDE

Step 1 - Choosing a Picture

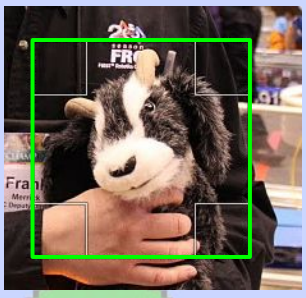
1. Pick a photo of yourself, or whoever/whatever you're making an icon of. This could be your best friend, your dog, your mother, your team picture, or even your robot.
   a. While the photo doesn't need to be especially high quality, I recommend starting with something at least 300x300px. This ensures your ability to understand details for making your icon. However, depending on the size you plan on reducing it to, you could possibly run with something smaller.



ACCEPTABLE



UNACCEPTABLE



ACCEPTABLE

For people and animals, I recommend having a bust shot of the person, like below. Make sure the head, shoulders, and top of the hair will not be cut off in a square, because freehanding that can be difficult.

For these next steps, I'll be using ***GIMP***, a raster photo-editing program, which is not only free, but open source. You can use whatever art/photo-editing program you want, though I recommend at least completing these next couple steps in GIMP to ease up your process.

By: Valerie Shum

Step 2 - Pre-Adjustments

1. Crop your image to a square with the shoulders and head intact. There should be a little bit of open space above the head in the image cropped. When you complete that, you want to use the Free Hand Select Tool, also known as a lasso tool, to select solely the figure you're trying to make an icon of.
2. After that, you want to remove the background.
   a. There's a couple ways to do this, but my favorite is to cut the image from the original layer, delete that layer, and paste it on a new layer. Because GIMP doesn't usually have alpha (transparency) on a layer an image is imported into, creating a new layer is often less finicky than changing the properties of the original.
   b. The reason why you would want to do so is because when you reduce the image's size, the background could make seeing the boundaries of the figure more difficult.
      i. You should save your file around this point, in case something messes up. I recommend saving it as both a PNG file and something that retains layers, like a PSD file.

For example: This is a pretty nice crop of Frank Merrick!

But this is an even better crop of a goat plushie.

This is the kind of result you'd want from the Free Hand Select/Lasso tool.

By: Valerie Shum

Step 3 - Pre-Adjustments Cont.

1. Next, you want to scale your image. You can do so by pressing "Image" → "Scale Image." You can set the image size to however many pixels you want, though in this case we're going to go for 40x40px.
2. However, if you don't set your Interpolation to "None," your image can become blurry. (Not fun)
   a. Save another copy of the image.

40X40 px is about this small.

Step 4 - Completion

1. If you want, now's a good time to play with color settings, like saturation or contrast, to make your image pop.
2. Create a layer behind your image, and fill it in with the color of your choosing!
3. You can export the image as a png graphic to remind yourself of what you've created, or you can scale it up, the same way as you did during the last step!
   a. Why png? Images that are jpg are generally more compressed, and the pixels can get more grainy (yuck) in highly compressed jpg images due to the way they're compressed.
4. I recommend scaling to a multiple of 40x40px, like 800x800px, or more.
5. Export the image as a png, and it should look something like this!

ENTER NEXT LEVEL?

By: Valerie Shum

Advanced Section

Want some cleaner pixels? Or maybe some spiffy, hand-chosen edits? Then you've come to the right place! I'm here to give tips to optimize your image.

This is actually based more off of my personal process.

If you just scale down and scale up an image, the result isn't the cleanest. While the effect can look cool, it lacks the limited palette and relatively simple color transitions we know and love from older games.

We'll be continuing from where Step 3 left off.

1. Colorify your image to turn it into a grayscale piece. You could also lower the Saturation to 0, but in this case, press "Colors" → "Colorify," and make sure the color you are colorifying to is white. You'll be hand-adding colors later!
   a. We're lowering the saturation so that the next steps work without yucky generated colors, which are great distractions, but not good art choices in this case.

Sorta like this

2. To get that limited palette feel and pixely goodness, Posterize your image, by pressing "Colors" → "Posterize."
   a. For this, you want about 6-10 levels of Posterization, though this depends on how complex your image is.
   a. The best way to figure out is to spot-check, and trusting your view.
   b. It's better to be a little bit less complex than over complex, because you can still freehand later.

This is a good level of Posterizing, now scaled for visibility

By: Valerie Shum

Step 2 - Colors, Colors, and More Colors

1. Something that can make or break your image is the color palette. You can pick colors from the picture itself (with or without some modification), to various palettes online, or even just going by hand using color theory.
   a. Some online spots, especially great for those without a color background are:
      i. Paletton, which provides opportunity to customize and create quick and easy color palettes that adhere to standard color theory.
      ii. Colourlovers, which has tons of awesome baseline color combinations to build upon.
      iii. Good ol' Wikipedia, which has 8-bit hardware palettes, and video game palettes among other things.
2. You want to limit the number of colors to about 3 per main color grouping, but you can limit the palette further by adhering specifically to a real game palette. Sometimes, if you're feeling confident, you can work on certain sections with more than 3 varieties. Avoid overdoing it on the colors though, because it can look really messy if you overdo it.
   a. However, I recommend keeping skin-tones especially to a more limited level of color, somewhere between 2 or 3.
3. Depending on if the application you use has a type of palette, mark one pixel for each color on the top left corner.
   a. The pixel brush can be found on GIMP under "Pencil Brush," and selecting the brush.
   b. On that note, to create a hard edge on the eraser (so that pixels erase cleanly), click it and select "hard edge"

By: Valerie Shum

Step 5 - Creating and Scaling your image

1. Open up another copy of the original image, as reference for color placement.
2. Create more layers
   a. Label each layer with your intention, for example, "Face 1,"
   b. You want to isolate each color onto a single layer, so that you don't mix them up.
3. Use the "Fuzzy Select Tool," also known as the "Magic Wand," to rapidly select the area you want to use. Make sure to have "Sample merged" on it, as well as turn off Antialiasing. .
4. Increase the size of the pixel brush to cover more space, and fill it in.
   a. Continue doing Steps 1-3 for different colors and layers. Note, I don't usually deal with faces in my work, but I recommend not having too much contrast between the skin and the face.
5. Make the original layer transparent. Create a new layer and pick a background color/pattern.
6. Reduce the pixel brush size back to 1px,
   a. Modify as needed to make it more attractive. A lot of this is just editing to taste.
   b. Usually rounding off 2x2 corners and smoothing off color transitions is what you need to do at this stage. Trust yourself for this!
7. Afterwards, you want to scale your image like you did at the beginning, but this time to a larger scale, with interpolation still off. I recommend going for a multiple of the number you scaled down to. This ensures cleaner results.
8. Save your file, and export it as a png file by pressing "File" → "Export As"
9. And, voila, congratulations on your new image!

By preference, you could omit step 3 by freehanding, to take some artistic license and add your personal spin. This will take more time, but it's also quite fun to complete. My best results always take freehanding bits.

There's always ways to improve your piece, but don't sweat it too much. No one's perfect, and that's okay! Just have fun with this!

By: Valerie Shum

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About the Creator

Hi, I'm Valerie Shum, a senior in high school and aspiring volunteer. I'm not currently with a *FIRST*® Robotics Competition team, but I enjoy scouting.

Influenced by icons created by Erik Boesen and Tim Winters, from *FIRST*® Robotics Competition team 1418, Vae Victis, I've developed a more holistic approach to icons and pictures. Another style influence is the amazing Jaye Betts, founder of LGBTQ+ of FIRST.

While I might not have much of a design background, feel free to email me at valeshum@gmail.com, or contact me on Chief Delphi, as Vale.

START NEW GAME?