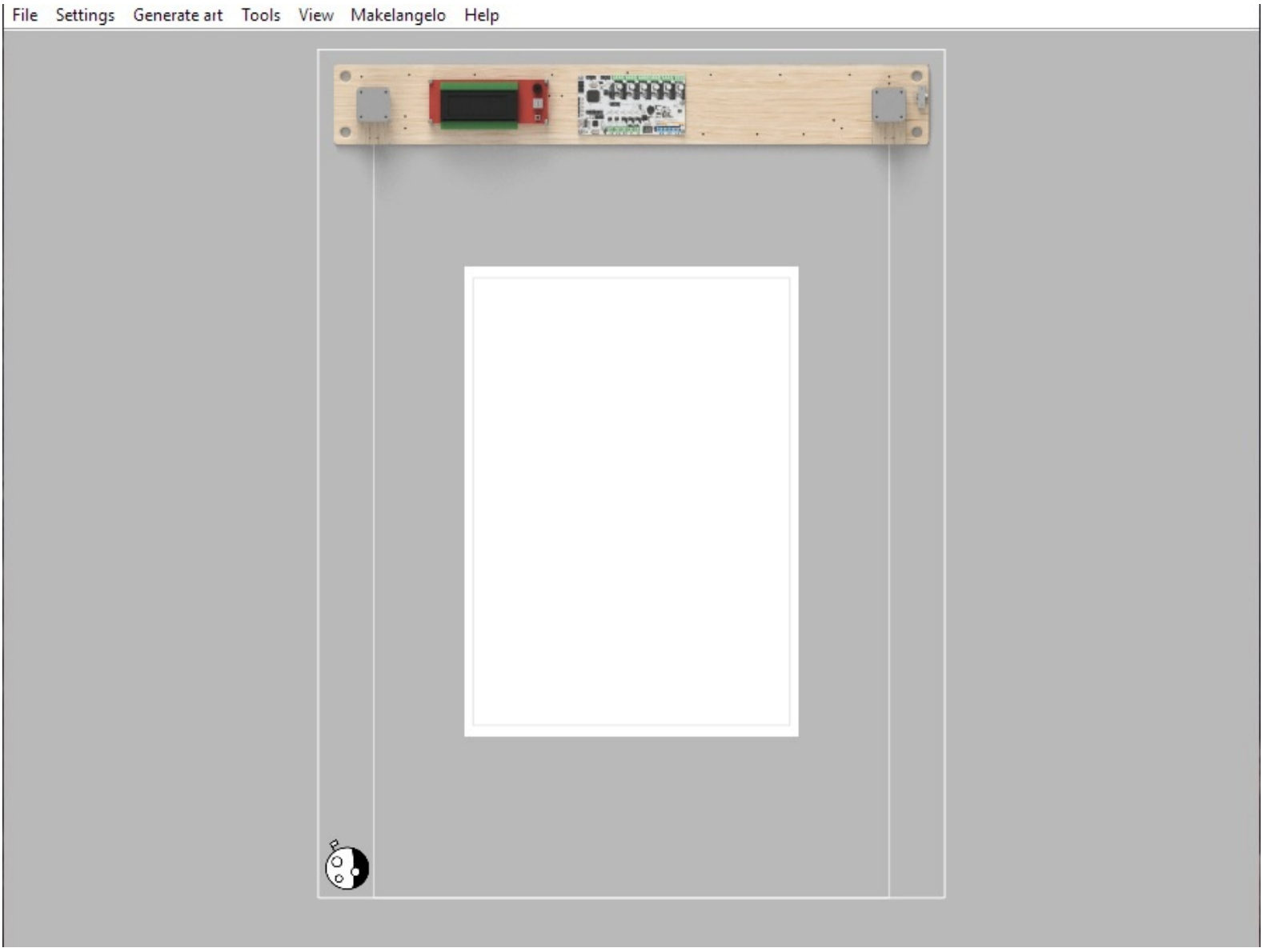
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4. How to use Makelangelo Software 7.32+

Instructions for running the software for the first time, preparing the drawing and sending it to your plotter robot.

Written By: Dan Royer

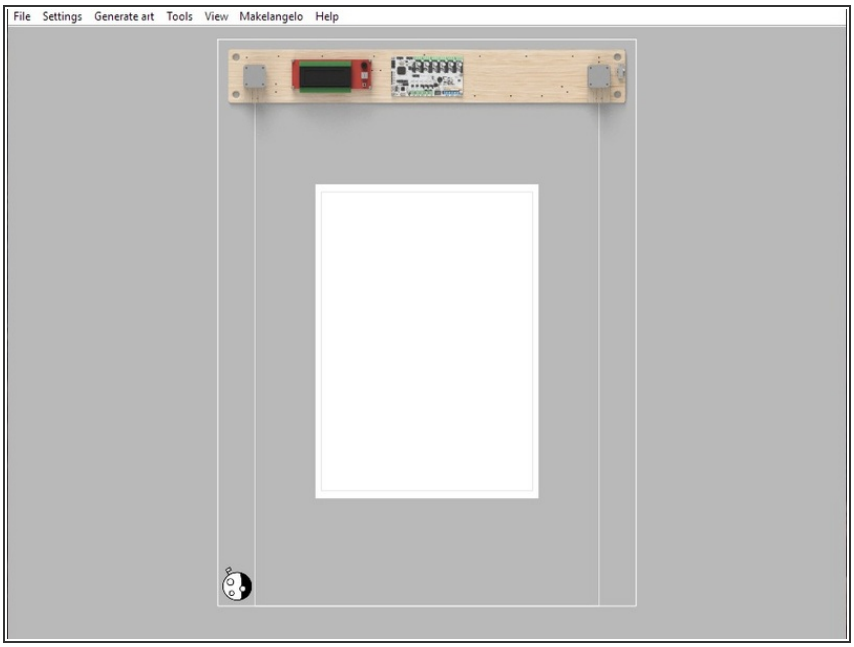


INTRODUCTION

Instructions for running the software for the first time, preparing the drawing and sending it to your plotter robot. There is more than one way to **Prepare** art and more than one way to **Run** the robot. It's OK to skip some steps.

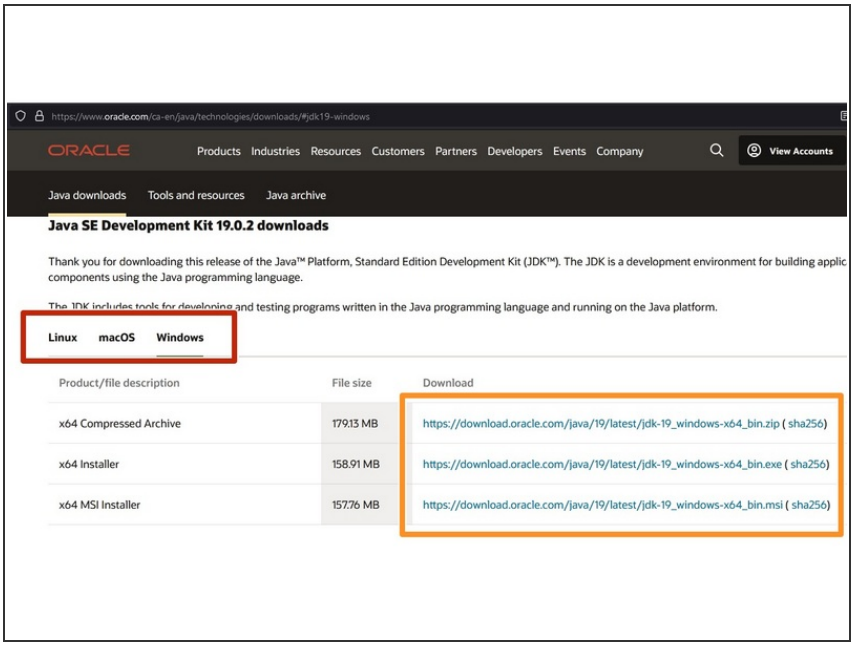
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Step 1 — Welcome!



- This guide will show you how to use Makelangelo Software 7.32.0+

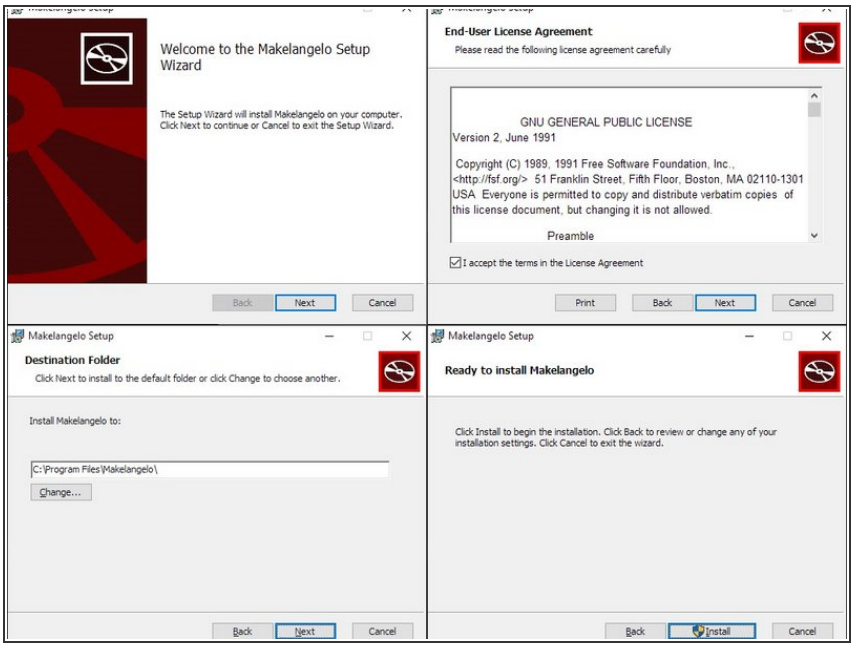
Step 2 — Install Java (if necessary)



- Visit https://www.oracle.com/ca-en/java/techno...
- Choose your OS
- Click the link of your choice to download the Java installer app.
- Run the installer app when the download is done.

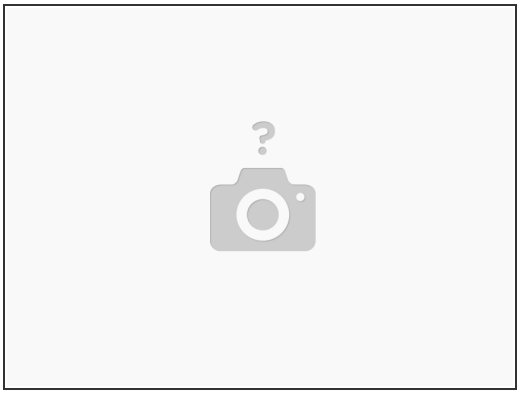
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Step 3 — Install Makelangelo Software



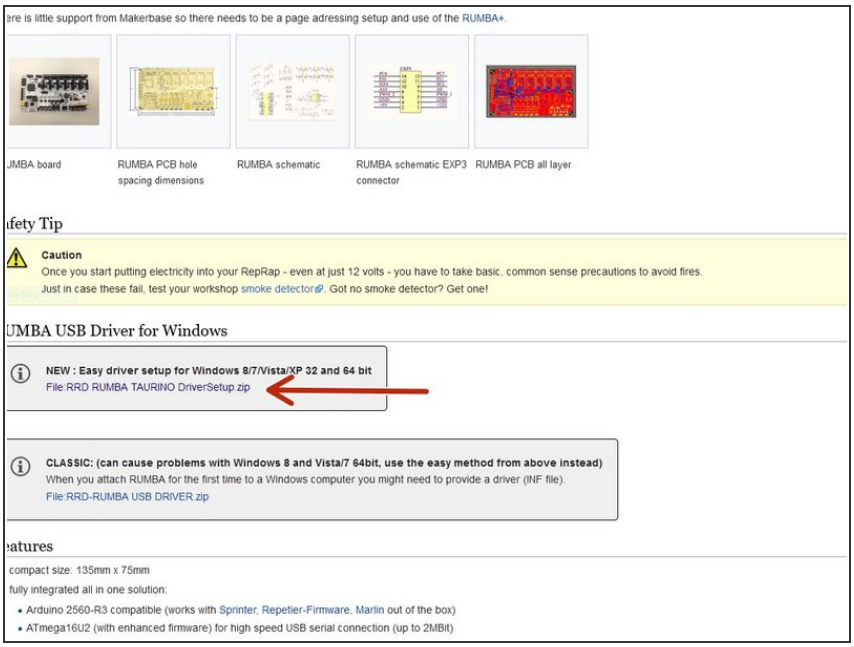
- Makelangelo Software for Windows, Mac, and Linux can be downloaded from two places:
  - The official stable release
  - The unstable Nightly Build
- After downloading the application, run it and follow the steps therein to install Makelangelo Software.

Step 4 — (Apple) Remove Quarantine Flag



- *Apple could not verify "Makelangelo-software" is not is free of malware that may harm your Mac or compromise your privacy.*
- Open Terminal.
- Run the following command (adjust the path if it's not in Downloads):
- xattr -d com.apple.quarantine ~/Downloads/makelangelo-x64
- Now try dragging it to the Applications folder again.

Step 5 — Windows only: Install RUMBA Drivers



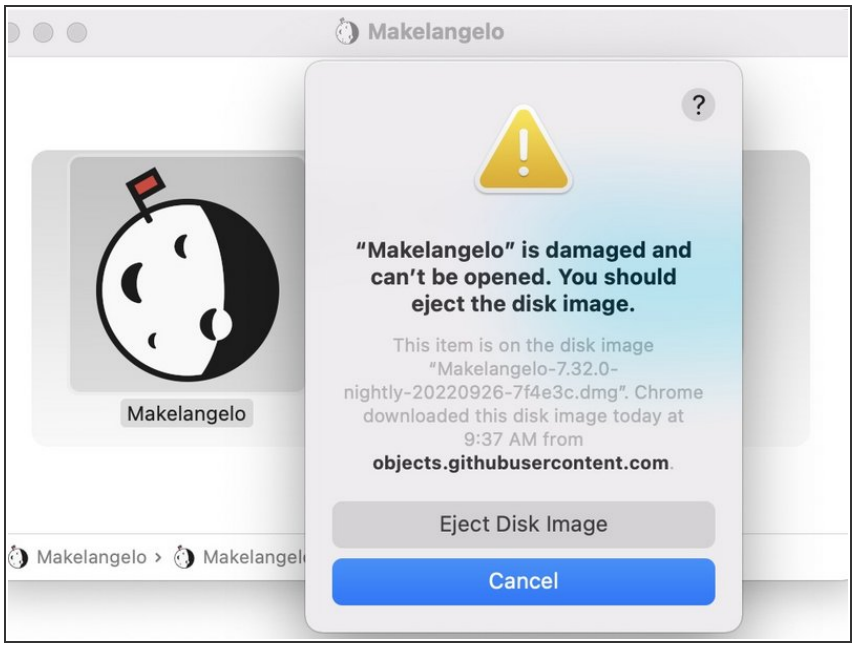
- Makelangelo robot uses the RUMBA control board in the robot. To talk to your computer you may need to install a *driver*.
- If you are on Windows, please make sure you already have the drivers for the RUMBA board from https://reprap.org/wiki/RUMBA#RUMBA_USB_...

Step 6 — Run Makelangelo Software



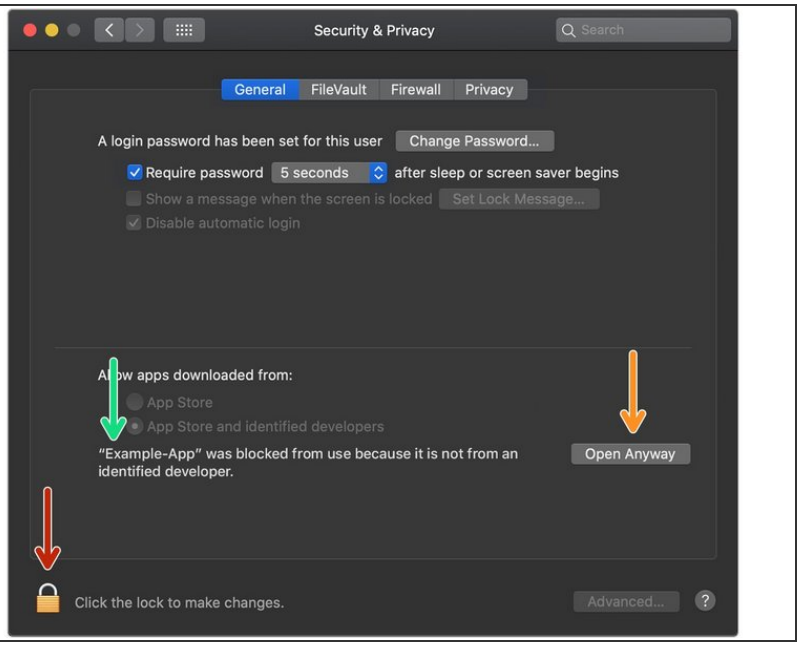
- Double click on the app in your PC.
- A dialog will ask you to choose your preferred language.
  - Don't see your favorite? Help us help you! https://crowdin.com/project/marginallycl...

Step 7 — OSX "file damaged" message



- Open the System Preferences by Selecting *Apple Menu > System Preferences*
- Click *Security & Privacy* under the *General* tab.
- Click the icon labeled *Click the lock to make changes* in the bottom-left corner.
- Enter your username and password into the prompt that appears and click Unlock. (If you have no password, this can be left blank).
- Under the section labeled *Allow applications downloaded from:*, select the option "Anywhere". On the prompt that appears, click "Allow From Anywhere."
- If that doesn't work, open a console and entering the command **sudo xattr -cr /Applications/Makelangelo.app**
- This is due to this bug

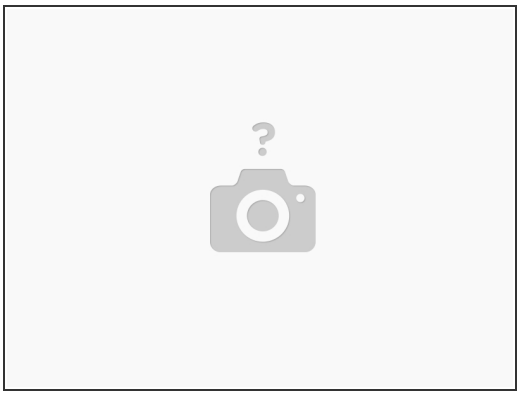
Step 8 — OSX security issue



- OSX may block the Makelangelo Software because it is from an "unidentified developer".
- Click the apple icon in the top left, then *System Preferences*, then *Security & Privacy*. Having just tried to run Makelangelo-software*.jar, it should appear in this message.
- You might need to unlock to allow security changes.
- Click *Open Anyways*.

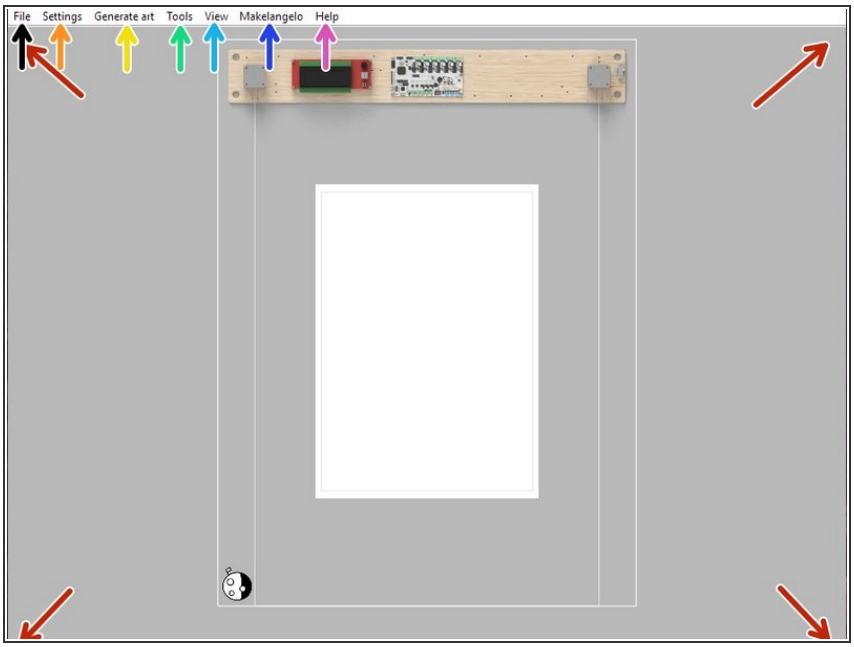
ⓘ Your security for this version of the app should now be set forever. Next time the app updates you might need to do this again.

Step 9 — Mac USB connection



- Mac security has tightened recently and will not accept connections from unknown devices.
- This Apple support page may offer some help: https://support.apple.com/en-us/102282

Step 10 — Familiarize yourself with the controls



- In the main window you can drag to pan and scroll the mouse wheel to zoom the *what you see is what you get* preview.
- The File menu is where you can load images including SVG, DXF, Scratch 3 programs, and bitmaps like photographs or your favorite meme.
- The *Settings* menu controls the paper, pen, and plotter preview. The default paper size is A2.
- The *Generate Art* menu creates different styles of algorithmic procedural art. Try it and see!
- The *Tools* menu will change your art after being loaded/created. **Scale**, **flip**, and *optimize for drawing* tools like **Simplify** and **Reorder**.
- The *View* menu can move the camera with **zoom to fit** but also **show travel moves** and advanced features like **render style** which reveals *how the robot thinks about the art being drawn*.

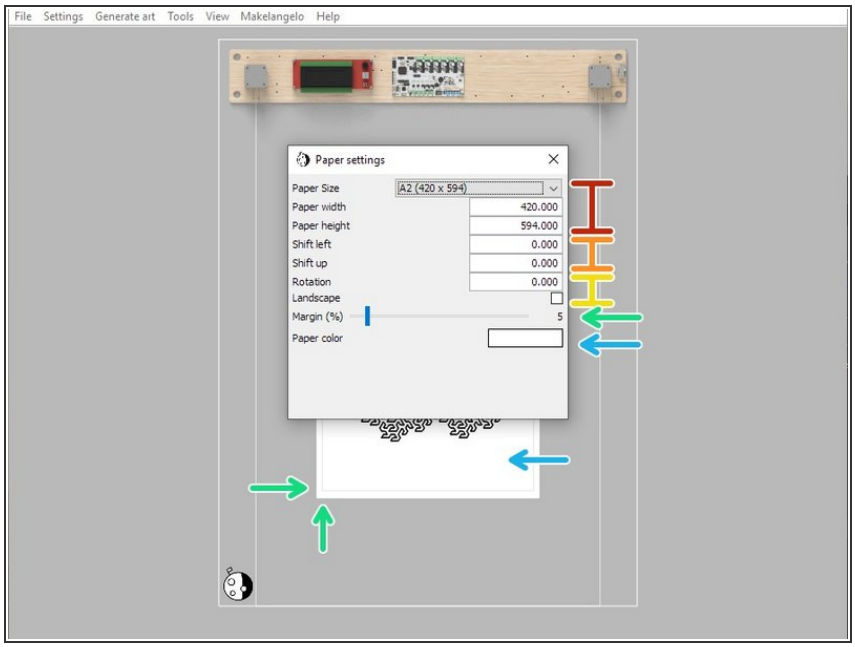
- The *Makelangelo* menu controls the cosmetic preview of the robot, the drawing **estimate time**, robot commands **save GCODE to SD**

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card/disk, and finally **Open Controls** to talk live to a connected robot.

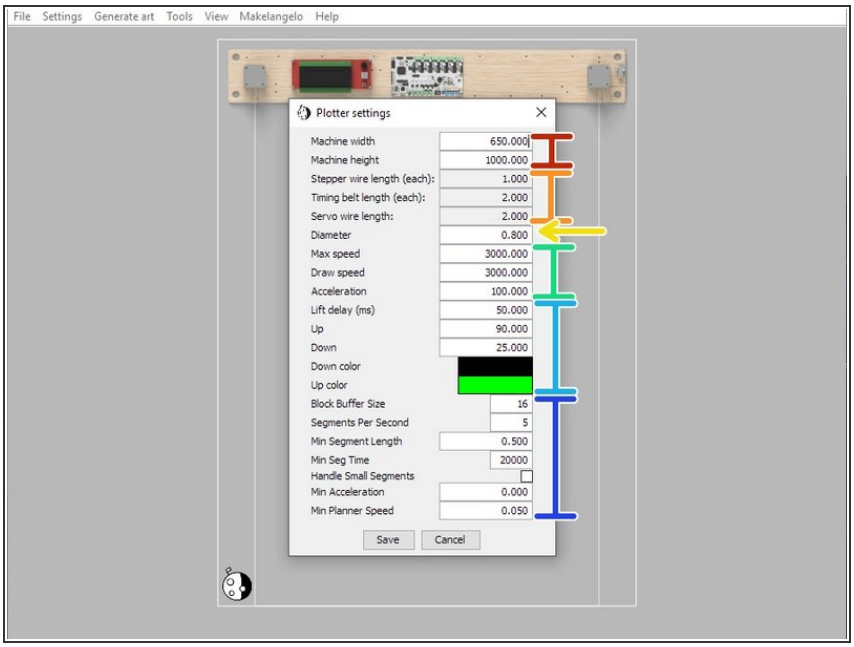
- The *Help* menu has links for our Discord forums, a **check for updates** features, and more.

Step 11 — Paper Settings



- *Paper size* will automatically change the *width* and *height* based on pre set values.
- *Shift* will move the paper inside the printer.
- *Rotate*will turn the paper. *Landscape* will instantly switch between 0 and 90 degrees.
- *Margin* on your paper will prevent the pen from going off the edge.
- *Paper color* is great for experiments with silver/gold pens on colored paper.

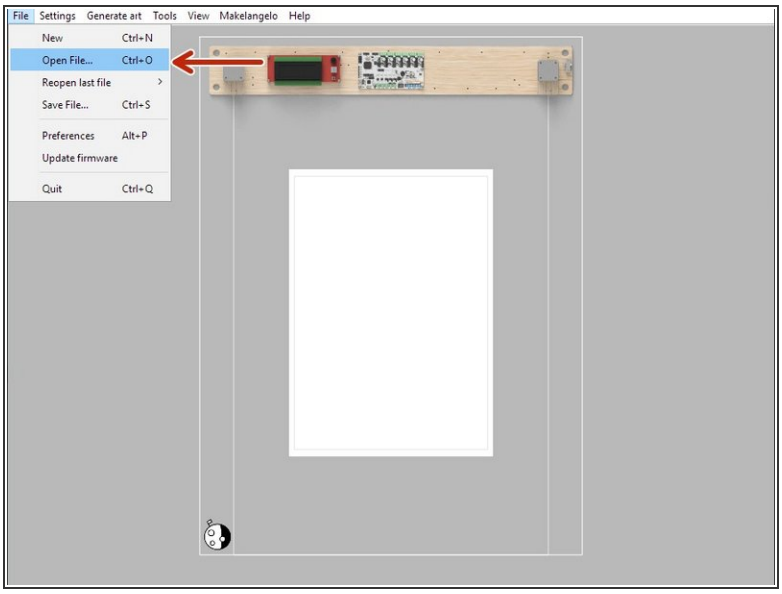
Step 12 — Plotter settings

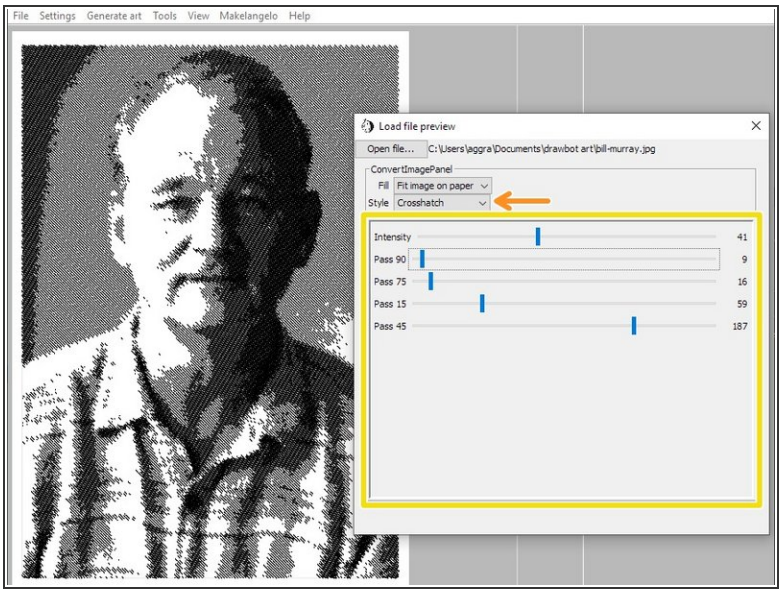


- These are advanced settings most people don't need, here so you don't wonder.
- *Machine width* and *Machine height* control the size of the maximum allowed drawing area, aka the *work area*.
- If you are making a DIY plotter the *Stepper, Timing belt,* and *Servo* length (meters) will help you plan your design.
- Diameter controls the size of the pen tip on the paper. This is used by nearly every algorithm. The default size of a Sharpie tip is 0.8mm
- *speed* and *acceleration* affect horizontal and vertical movements, only. Experiment and share your results in the forums.
- bigger *Lift delay* makes the pen rise and fall from the paper more slowly, which helps prevent bouncing. *Up* and *Down* are angle values. The default is 90 for up and 40 for down. *Up color* can only be seen when *View> Show travel moves* is on.

- The remaining settings are advanced parameters used for time estimates and should only be changed by expert users.

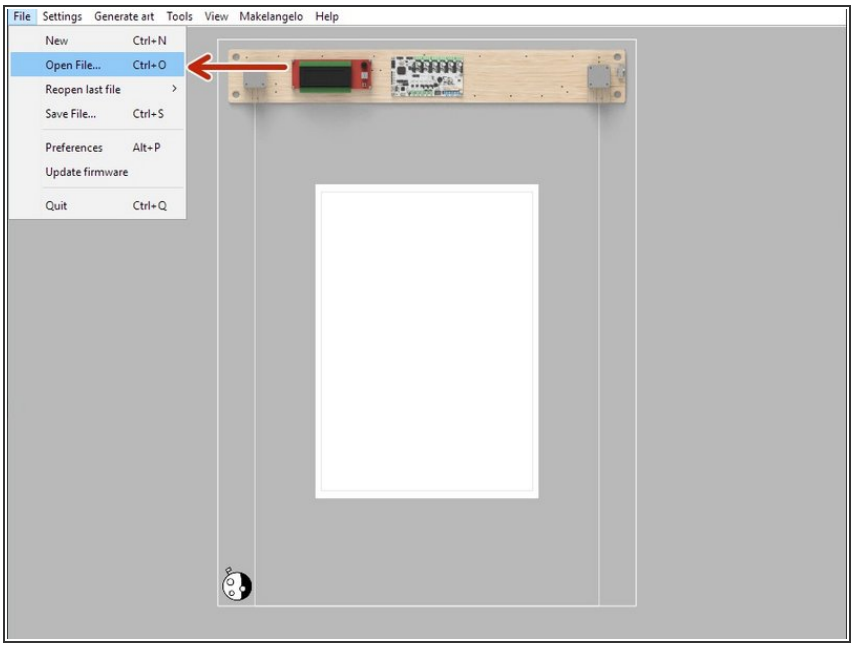
Step 13 — Draw from a photo





- Click *File > Open File...* and select your **PNG**, **BMP**, **JPG**, **GIF**, or **PIO** image file.
- The *Style* list lets you choose one of several image-to-line converters.
- Most styles will have additional settings to tweak.
- ⓘ When you are satisfied, close the dialog and proceed to *Makelangelo > Save to SD card* or *Makelangelo > Open Controls*. (we recommend the SD card)

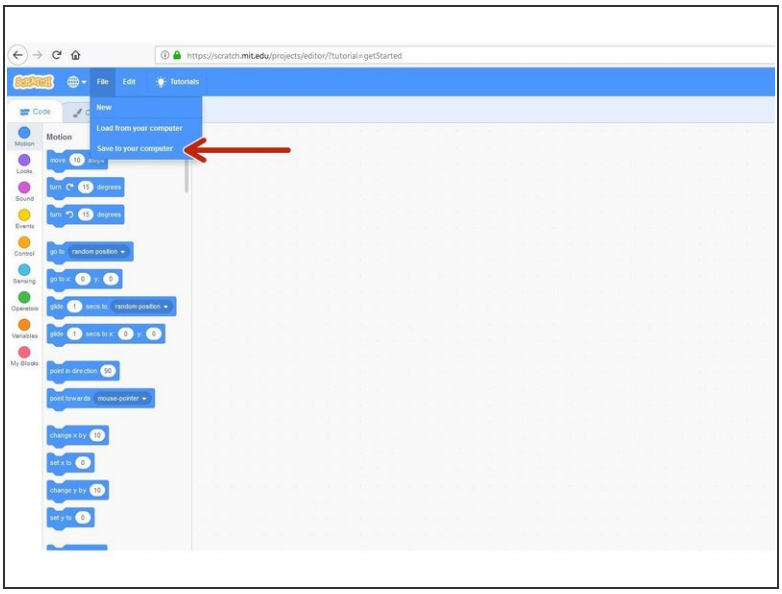
Step 14 — Load a vector file

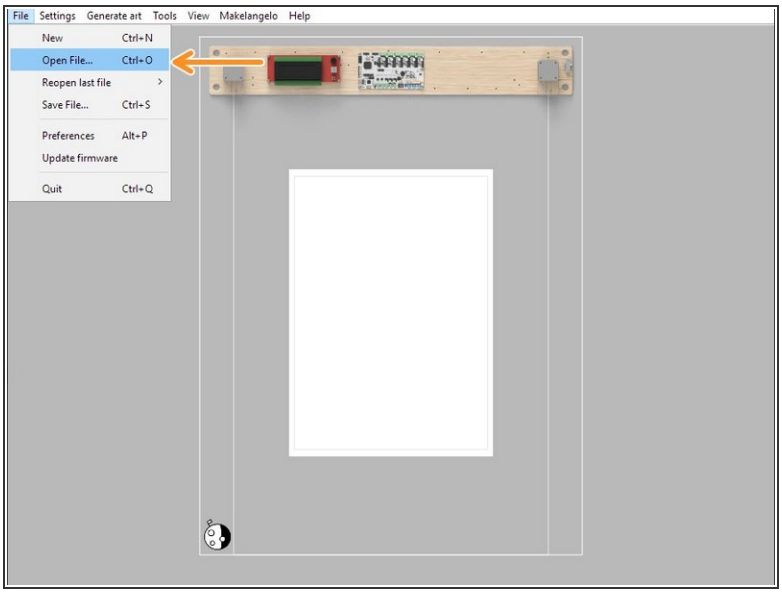


- Click *Open File...* and select your **DXF**, **SVG**, or **GCODE** file. The image will be automatically scaled to fill the paper margins.

ⓘ When you are satisfied, close the dialog and proceed to *Makelangelo > Save to SD card* or *Makelangelo > Open Controls*. (we recommend the SD card)

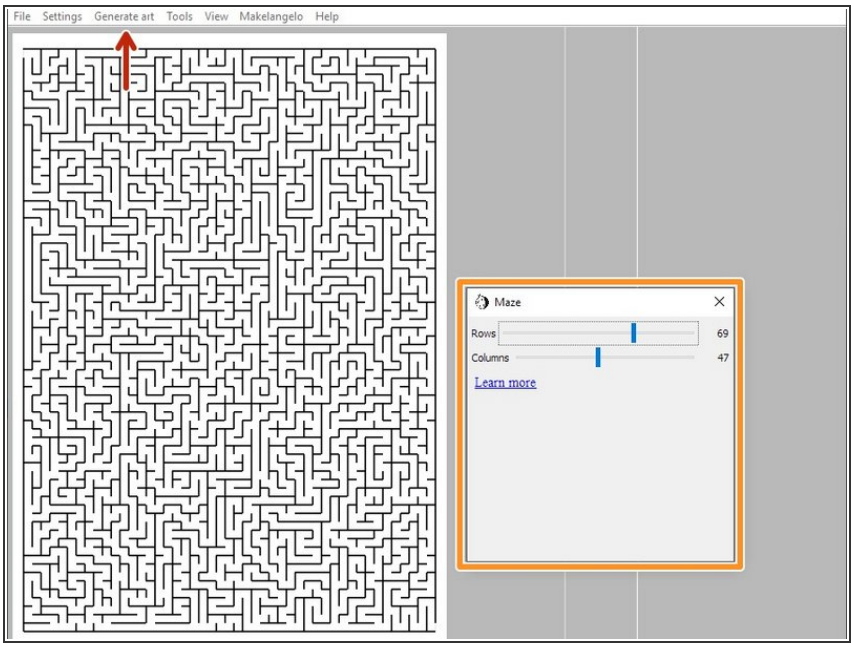
Step 15 — Load a Scratch file





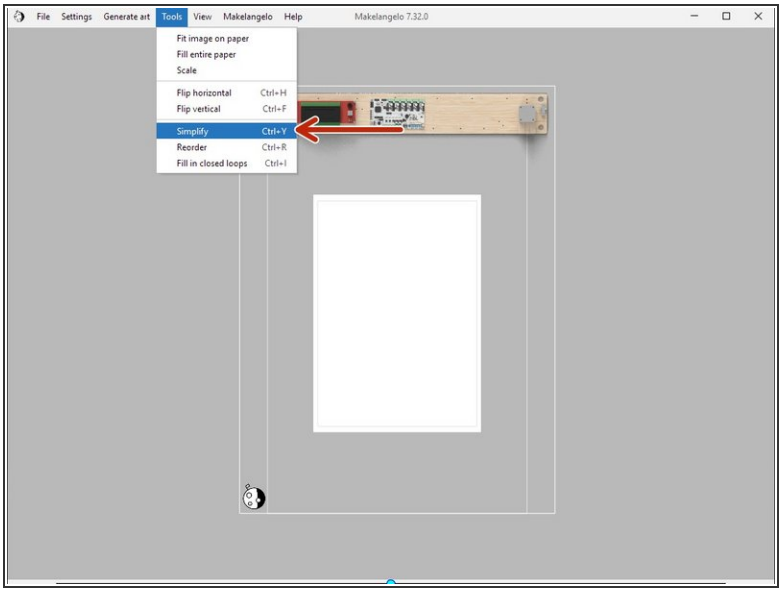
- Build your Scratch drawing at https://scratch.mit.edu/.
- Click *File > Save to your computer*.
- Click *Open File...* and select your **SB2** or **SB3** file. The resulting program will be automatically scaled to fill the paper margins.
- When you are satisfied, close the dialog and proceed to *Makelangelo > Save to SD card* or *Makelangelo > Open Controls*. (we recommend the SD card)

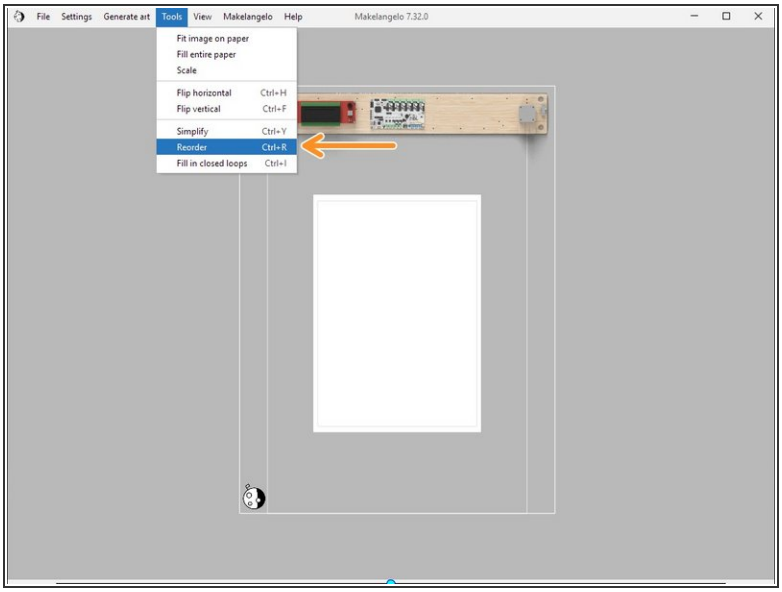
Step 16 — Generate art



- Click *Generate art* and select a style. Here the user has chosen *Maze*.
- Many styles have sub options that can be adjusted. Experiment!
- ⓘ When you are satisfied, close the dialog and proceed to *Makelangelo > Save to SD card* or *Makelangelo > Open Controls*. (we recommend the SD card)

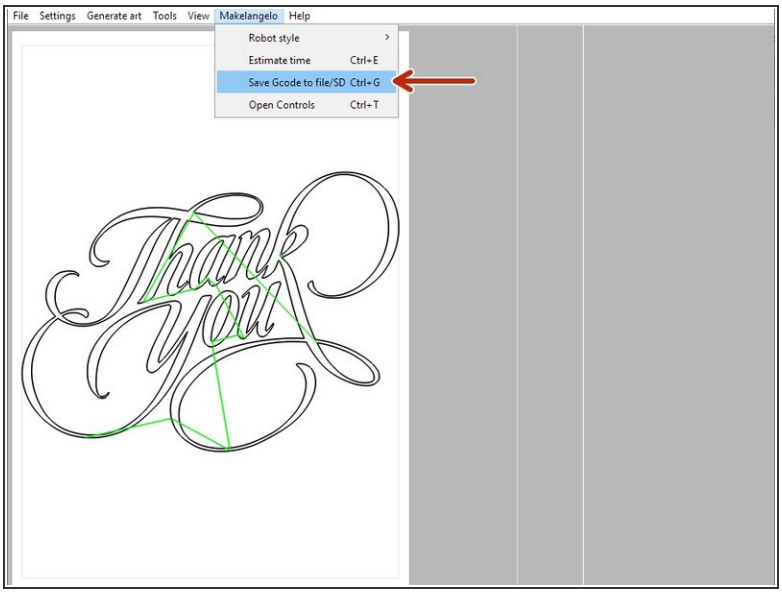
Step 17 — Optimize drawings

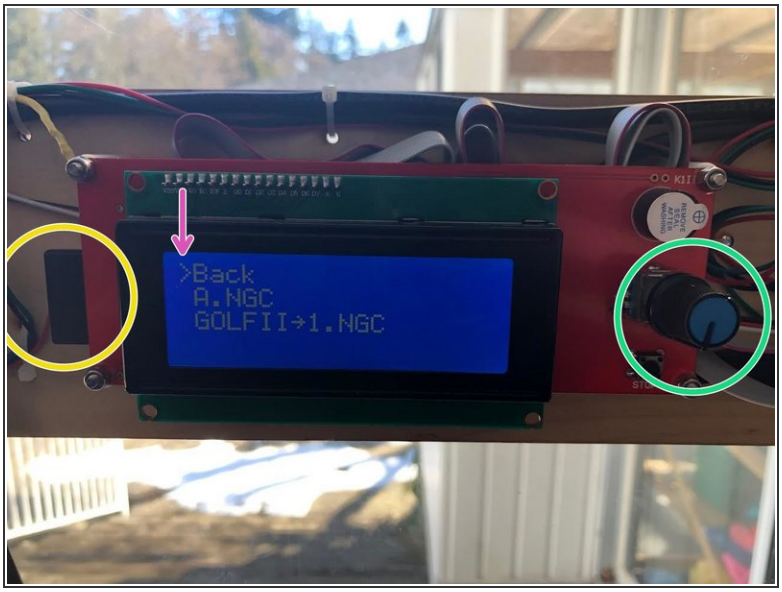




- **Simplify** looks for short lines that - added together - would equal one longer line and makes the swap.
- **Reorder** rearranges the existing lines to reduce the total amount of travel moves. Try it when "show travel moves" is turned on!

Step 18 — Draw from SD card (recommended)

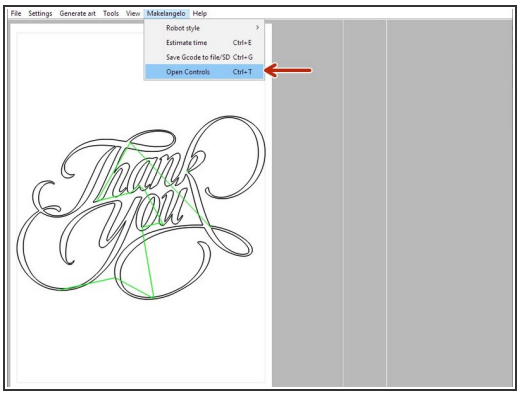


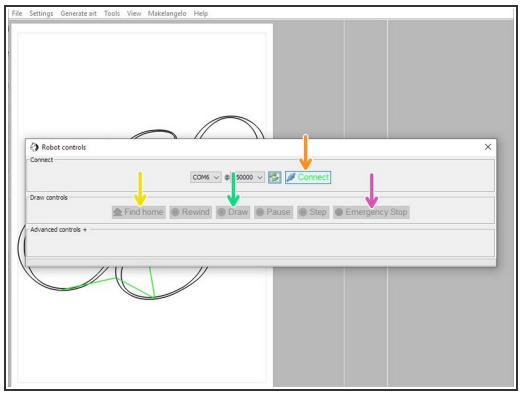


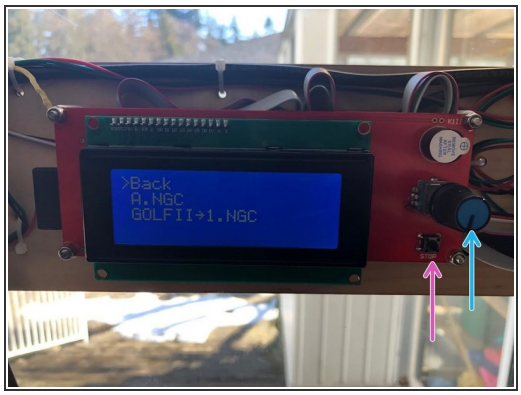
- Put the SD card in the computer and click *Makelangelo > save to file/SD card*. Follow the steps and save the file to the SD card.
- Eject the SD card and plug it into the robot on the left side of the LCD panel.
- Click the dial, scroll down to **print from media**, click again, scroll to the file, and click one more time. Follow the prompts on the LCD panel.

Don't forget to **Find home** on the robot before starting your drawing! Find home can also be done through the LCD menu.

Step 19 — Run the robot connected

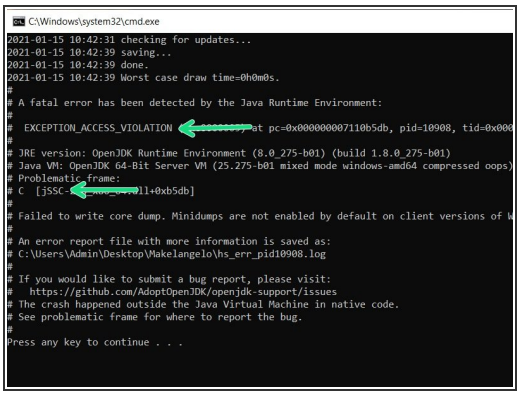


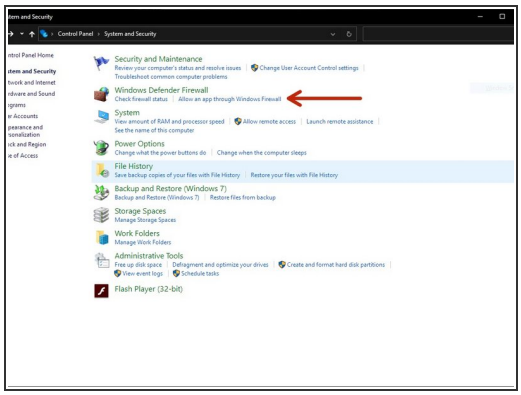


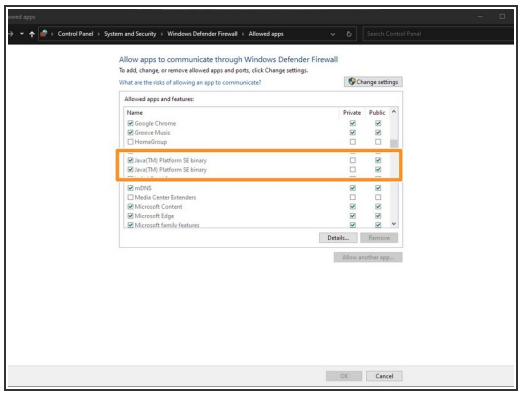


- Plug a USB cable from the robot into your PC running Makelangelo Software.
- Click *Makelangelo > Open Controls*.
- Choose a port and click *Makelangelo > Open Controls*.
- ⓘ If you have no port then your robot is not on, not connected, or your operating system has a security issue.
- click *Find home*. Your robot should move the pen head down and the counter weights up until the weights touch each switch twice.
- Click *Draw*. You will be reminded to setup your pen in the pen head. Now is a good time to take the cap off the pen!
- The same warning appears on the LCD panel. You much click the blue dial by pressing in, once. The machine will begin to draw.
- If something is going wrong with your drawing, you can press the reset button on the LCD panel or *EMERGENCY STOP* in the app.

Step 20 — Windows firewall issue



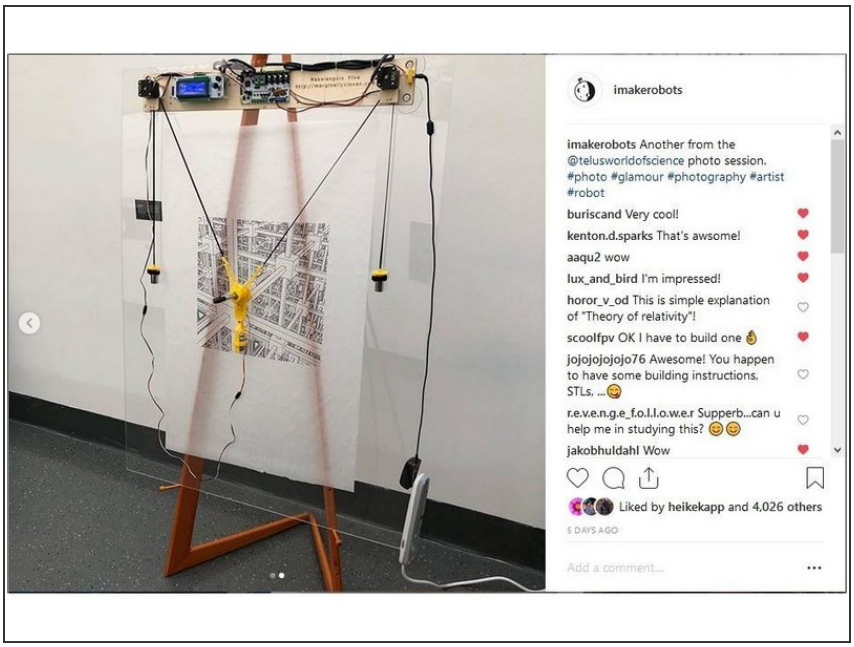




- This error often looks like Windows crashes when you click **Connect**.
- In Windows press **Windows Key + R** to open *Run*.
- Type **control** and press *OK* to open Control Panel.
- Click on *System and Security*, then *Windows Defender Firewall*, then *Allow an app or feature through Windows Defender Firewall*
- In the allowed app window, scroll through all the apps. Locate the **Makelangelo**. If it does not appear, locate **Java(TM) Platform SE binary**.
- If it is unchecked, the app is blocked on the Firewall. Check the app and click *OK*.

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Step 21 — Show off your creation



- Take a picture.
- Post it on social media. Some great tags are #plottertwitter, #plotter, and @imakerobots so we can reshare it