Auto Etch A Sketch

Needs

* Autodraw
* Case
* Image to gcode

Wants

* Battery operated
* Fast draw speed
  + Sub 30 seconds for text
  + Sub 10 minutes for images
* Etch easily removable to erase
* Mechanically Simple
  + Top webcam mount
  + Stand for electronics/sit on
    - MAYBE MAKE IT FOLDABLE TO PUT ON WALL???
  + Motor mounts
  + Think geared vs ungeared

Tasks

* Plan Electronics
  + Controller
    - Wifi access?
    - USB access for webcam?
  + Motor
    - Torque?
  + Motor controller
  + Battery
  + Indicators
  + On/off
* Plan Mech
  + Gears
    - Ratio
    - Teeth Size
    - Mount location
    - Mount technique (screw holes)
  + Case
    - Etch a Sketch slot
    - Motor fit
    - Cap fitment
    - Electronics box
* Buy Shit

Resources to follow/take ideas from

* [How this robot that got us into OpenSauce](https://www.youtube.com/watch?v=iQhhutAanu0&ab_channel=EveryFlavorofRobot)
* [Arduino etch a sketch clock finished](https://www.youtube.com/watch?v=Andqi_PZBqo&ab_channel=randrcomputers)
* [Raspberry Pi Auto Etch A Sketch™](https://www.youtube.com/watch?v=6tTF2i9Zns8&t=296s&ab_channel=element14presents) ([Raspberry Pi Auto Etch A Sketch™︎ -- Episode 372 - element14 Community](https://community.element14.com/challenges-projects/element14-presents/project-videos/w/documents/8497/raspberry-pi-auto-etch-a-sketch----episode-372))

Purchase List

* [STEPPERONLINE Nema 17 Stepper Motor Bipolar 2A 59Ncm(84oz.in) 48mm Body 4-Lead W/ 1m Cable and Connector Compatible with 3D Printer/CNC: Amazon.com: Tools & Home Improvement](https://www.amazon.com/STEPPERONLINE-Stepper-Bipolar-Connector-compatible/dp/B00PNEQKC0/ref=sr_1_3?adgrpid=1338106213675303&dib=eyJ2IjoiMSJ9.6bwZgnYtcN_NH0492YUVI9XBhazjIL2BEzxAl-WtHf_H6ObROcgIjvFMM7ditz2Lq-dlz4nNZcTzrlASFO5yME5vLRJmksSpHocz2HEEyd9T4QFou-LiFHBrjgpKsC_yeUmW74dcQDnbDfv6ZeDpJsOVUJL_Oh0AqyNhWkgMNUv_HvJbDHTAP1JiR11N75LGwa16xLQ2hyCt8H_hQ0WnZ116sGkDFqotvyviFBLUOKs.gTwlwfgYCLooAvY1ehavSausHltXpW77rr3uFuDO8j0&dib_tag=se&hvadid=83631787975713&hvbmt=be&hvdev=c&hvlocphy=45310&hvnetw=o&hvqmt=e&hvtargid=kwd-83631977711171%3Aloc-190&hydadcr=24662_13493378&keywords=stepper+motor&mcid=d1f3112ee76f3a5ab5b97a3a938d1583&msclkid=f00d8b121d5814304032e3b04c6c1dea&qid=1755468089&sr=8-3)
  + Fast, can handle 2A current if im pushing it hard
  + 12V
  + Overkill probably
* [Amazon.com: ELEGOO 3PCS ESP-32 Development Board USB-C, 2.4GHz Dual Mode WiFi+Bluetooth Dual Core Microcontroller for Arduino IDE, Support AP/STA/AP+STA, CP2102 Chip : Electronics](https://www.amazon.com/ELEGOO-ESP-WROOM-32-Development-Bluetooth-Microcontroller/dp/B0D8T53CQ5/ref=sr_1_4?crid=1HLGYWDJO4KE4&dib=eyJ2IjoiMSJ9.XBINg-sjhfF_gUtnMiKGjqjuRJgrvEqFyqImJMAjfvujud_4gMIiqQQY-xb6H2GubU84I0xkfubAilY35t8rXVs-doi3lKxFBvl8PKCchRJqpFTNM1fg2rW4B8XBtL2Tr8Y63yKYmk3IunH38UaSoUAR1_wDQKx_HcFPCwCaLCDgeFvE0b_FyAKFCapgqqnrOBJnsfluHqxq9fw9XtAmXvwGeLkqb8ATSND78O0hobM.KsHQpRkFmVdhpoEdTnLCDe6gciPQgtWdog4v9NrfTp0&dib_tag=se&keywords=esp32+wroom&qid=1755469825&sprefix=esp32+WR%2Caps%2C157&sr=8-4)
  + Built in wifi
* [Amazon.com: BIGTREETECH TMC2209 V1.3 UART Stepper Motor Driver 2.8A Peak Stepstick Silent Driver for Manta M8P, Octopus V1.1, Octopus Pro, SKR 3, SKR V1.4 Turbo, SKR Pro V1.2 3D Printer Control Board (2 PCS) : Industrial & Scientific](https://www.amazon.com/BIGTREETECH-TMC2209-Stepper-Printer-Motherboard/dp/B08SMDY3SQ/ref=sr_1_5?crid=320YZUBMIC7KO&dib=eyJ2IjoiMSJ9.k3D7TYuYVqg_1YbQyRIp-pDs0Ecrrn-kb9eWxFJenfJbW2aOLawdZqNsMd6a_PAX2Le8XflkSz5UkTKW59knATXFydrDTxJ5fxG43B41f8_TzJwoHAXNmMaG5TNGCaRz-W-UXrpwdPSZ1IpnggcgTJLUly1fSVmhWlJOfZcEiHHA337dxaTpEdulW79S3raOBm8hGN0nzqjcG7ZzqEBybjETFOSoEfcdUijtB9R7mms.5ECSlvucZXTk2uO6XNkZ43ev8C3YDZN7j4Epb2Fbd8E&dib_tag=se&keywords=tmc2209&qid=1755469418&sprefix=TMC22%2Caps%2C173&sr=8-5&th=1)
  + Smoother steps according to chat

DAILY LOG

8/18/2025

I have ordered motors, the driver, and the controller and they come in soon. My plan is right now to start the design of the 3D housing for all of it. Following that, I know i should use the ESP to just get the motors turning. Once I can do that, I want to hook up the motors to the etch a sketch to just a line. Then shapes. Then random lines i give it. I want to get the hardware to a point where I can give it gcode esq coordinates, and it draws it. Then i work on the image to gcode problem.

Use this to determine what size gear teeth to use - [Printing Test for Gear Teeth by MechEngineerMike - Thingiverse](https://www.thingiverse.com/thing:2021770) from [A Guide to 3D Printing Functional Gears - 3D Insider](https://3dinsider.com/3d-printing-functional-gears/)

Made the knob gear and modelled etch a sketch

8/22/2025

* I did a basic assembly before, but nothing came of it
* Changed it up so now I have an etch a sketch box holder thing and a bottom motor box im gonna glue together
* Having to figure out what gear sizes to make them connect

A computer screen shot of a gear

AI-generated content may be incorrect.

A screenshot of a black screen

AI-generated content may be incorrect.

-Printing is so hard with retreat wifi