Overview

We are using the Modela MDX-20 and cad to mill out circuit boards.

Tutorial

Step 1: Setting up the machine and board

Place a sacrificial layer like an old PCB stock sheet at square(1,1) with double-sided tape (make sure it is flat, otherwise, the board will not be milled properly).

Place the PCB sheet you are milling at square(2,2) also with double-sided tape.

You will be using a 1/64 bit for milling the traces, and a 1/32 bit for cutting the board.

So start with the 1/64 bit, loosen the screws and place the bit in, tightening just enough, but not too tight :)

In terminal, type: move 1 1 (that moves the x and y, respectively)

On the machine, use the up and down button, to adjust the z position. Get the tool as close as you can and then manually lower it (by untightening screws, letting the bit touch the board, and then re-tightening the screws). This is how you zero the bit.

Step 2: Uploading file and changing settings in cad for milling

You can either upload a png or a cad file.

Using a png file

```
set z min to -.005
set z max to 1
set x min and y min depending on the location of your board.
set contour to -1.
set the tool diameter to 0.0156 (that's 1/64)
set xyz speed to 4.
```

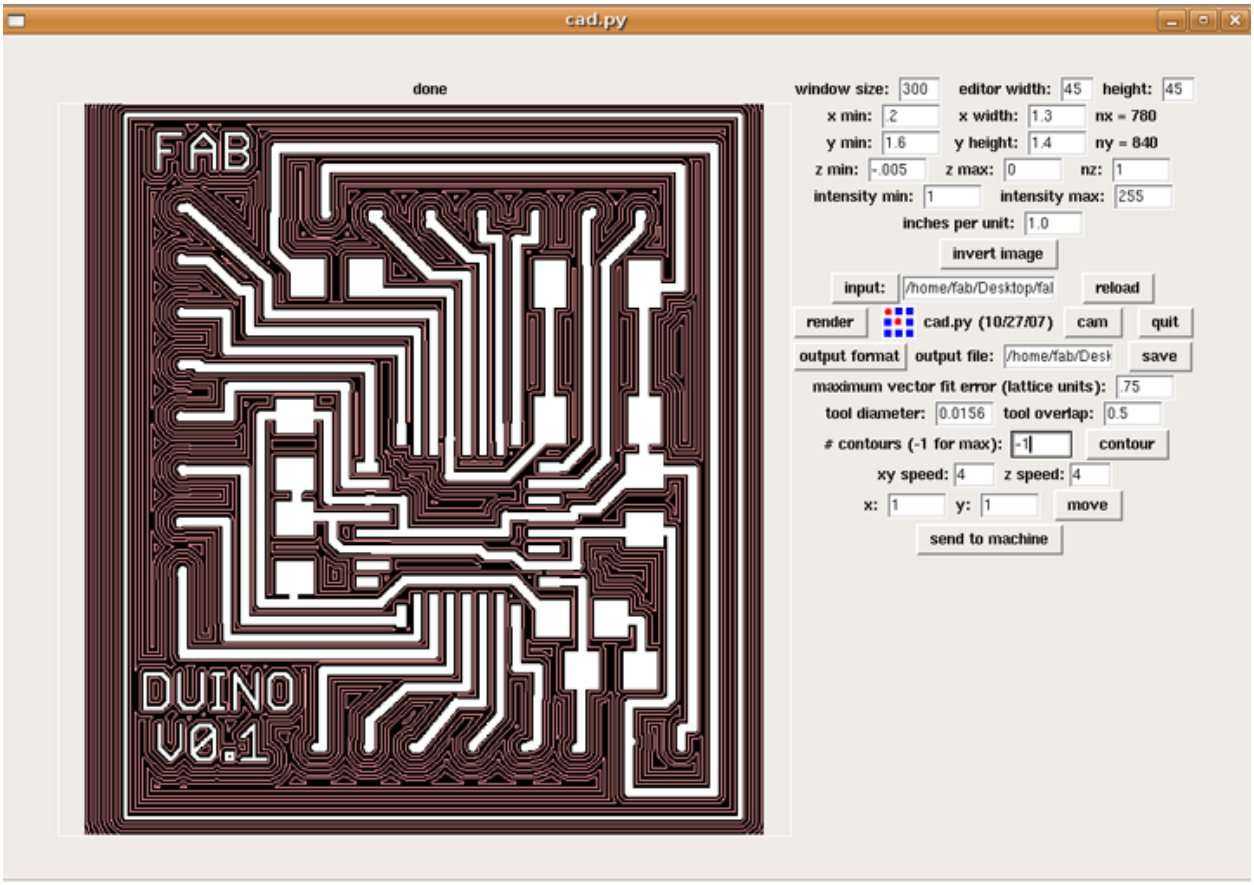
Contour and save the file (don't send to machine).

Using a cad file

some uncommenting to do (these are usually towards the bottom of the files:

```
     make sure that dpi is set to 500: dpi = 500 # high resolution for
machining
     make sure that this line is uncommented: cad.function = pcb.board
```

and then make sure all the other settings mentioned for the png are the same.



Step 3: Sending the file for milling

Since sending the file from cad does not always end up with a complete board, we save the file and then send it through terminal.

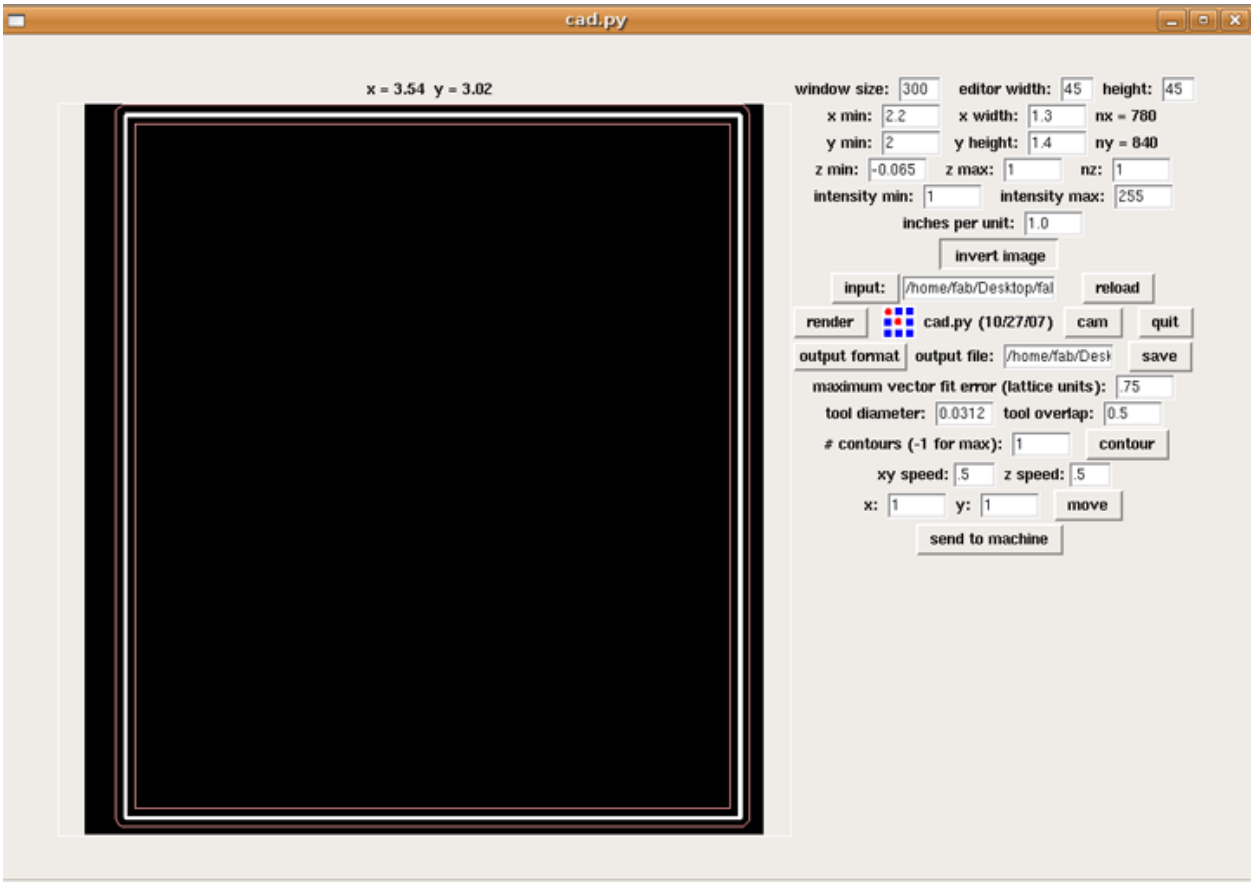
cat myFileName.rml > /dev/ttyS0

Step 4: Uploading file and changing settings in cad for cutting

```
      set z min to -0.065 (width of the board).
      set z max to 1
      set x min and y min depending on the location of your board (same as
when milling)
      set contour to 1
      set the tool diameter to 0.0312 (that's 1/32)
      set xyz speed to 0.5
```

We left nz at 1 and the modella was just fine cutting the board out with one pass at that speed.

Contour and save the file (don't send to machine).



Step 5: Sending the file for cutting the board

Same as with sending to mill, go through terminal to be sure the Modela completes the traces.

cat myFileName.rml > /dev/ttyS0