Requirements for motor control software/firmware.

What I want to happen:

* I want to be able to control each of the motors and by extension the heights of each of the segments attached to them individually.
* The total range of movement for the segments should be 1λ (8.575mm).
* I want to be able to use only as many of the motors as are actually needed for a given device (i.e. if the SSM we print only needs 7 actuators I want to be able to use just motors 1-7 to control the segments and leave the remaining 9 in an “off” state.)
* I want to be able to track the height of the segments in some way so that we can easily switch between configurations of the device (i.e. hologram of 1 -> hologram of 2 -> hologram of 3 etc…). It may be that the easiest way to do this is to reset all of the motors to some known “0 state” between configurations – this will be fine, I don’t need real time switching.
* I want each of the motors to be clearly designated with an ID of some kind – doesn’t matter what that is as long as it is clear. We should also show this in some physical way (maybe a tag attached to the wires coming from each motor?)
* I think all of this will probably need to be done using some software which talks to the firmware already present on the PCB, if you disagree with this and think firmware alone will suffice, then I am happy to discuss it.
* Probably no need for a GUI as long as the software is well documented and it is clear how it should be used, again can discuss if you disagree.

Inputs:

* For each configuration we will provide a vector of heights to the software for the motors to be moved to.
* As mentioned above we may also have a special “zeroing” command to give to them, so that we can be sure of their positions between configurations of the device. I will leave the details of that up to you.

Outputs:

* The motors move to the heights specified in the vector we provide.