Turn on Procedure:

1. The Box

* Make sure all input/output lines on the box are connected.
* Plug the power into the box.

1. The Teensys

* Now we upload the Teensy sketches. I recommend setting the clock to 120MHz and the code speed to “fastest”. These options are in the same tab as the board selection tab.
* Upload an Arduino sketch called intensityboard.ino to a Teensy 3.5 on COM 12. The board selection tab will show a Teensy Serial on COM11 and just a Teensy on COM11. I’ve been uploading the Serial one but as far as I can tell there isn’t any effect on performance.
* Upload an Arduino sketch called positionboard.ino to a Teensy 3.5 on COM 11.
* If you need to reupload a sketch to the Teensys, you will need to kill the Flask server to free the COM ports. You can do this with a CTRL+C command in the terminal that the server is running in.
* If it ever seems like the Teensy boards are doing nothing because they are stalled, press the reset button on the box. You will have to reupload the Arduino settings request to give them that information again.

1. Flask Server

* Now we turn on the flask webserver. Navigate to the folder containing the python file for the server in an anaconda prompt and enter the following two commands:
* set FLASK\_APP=rearrangementServer.py
* flask run --host=0.0.0.0
* Within a few seconds you should see output saying that its running on 0.0.0.0:5000. This indicates that the server can process requests.
* You can kill the server with a CTRL+C command or via HTTP request. If the rearrangement version of the LabVIEW server is running when you do this, the requests it sends will time out and interrupt the continuous cycling of the experiment.

1. LabVIEW

* Turn on the version of the LabVIEW server that sends requests to the flask server. This can be found in the LABVIEW folder.

1. Continuous Operation

* Send the settings describing the lattice, desired pattern, etc. The information you send should be self-consistent. The content of the requests are described in the requests guide file in this repository. The two pages you need to send requests to are:
* http:10.0.0.2:5000/python\_settings
* http:10.0.0.2:5000/arduino\_settings
* Any time any of the settings updated by posting to those pages change, post another change (again be sure to be self-consistent). Lack of self-consistency will probably produce internal server errors (HTTP code 500).