Micro Fluidic Handling System – Design Doc

Purpose: Provide an easy-to-use, modular, and compact microfluidic platform for PML-type chips (but can be used without them).

Hardware: Compact form-factor microfluidic handling devices that can be easily purchased and developed into a full microfluidic handler. Our system currently contains an ISMATEC-REGLO 3-channel peristaltic pump, A Rheodyne-Titan EX manifold switch, and a lab-made automated collection stage.

Hardware Plans: A microscope compatible collection stage is in the works. We’re considering designing our own pump. (96-well plate feeder?)

Software: Simple graphical user interface built in python and using basic serial communication. Device modules written in python. GUI gives user basic control over pump, manifold switch, and collection stage. Modularity built-in to some of the architecture.

Software Plans: Include modular software architecture expansion. Cleaning up of background architecture so that it’s more modular and patch-suitable (i.e. it can work for a range of pumps and manifold types, etc). Adding a visualizing feature to see the plates and flows (if other sensors installed).

**GUI.py**