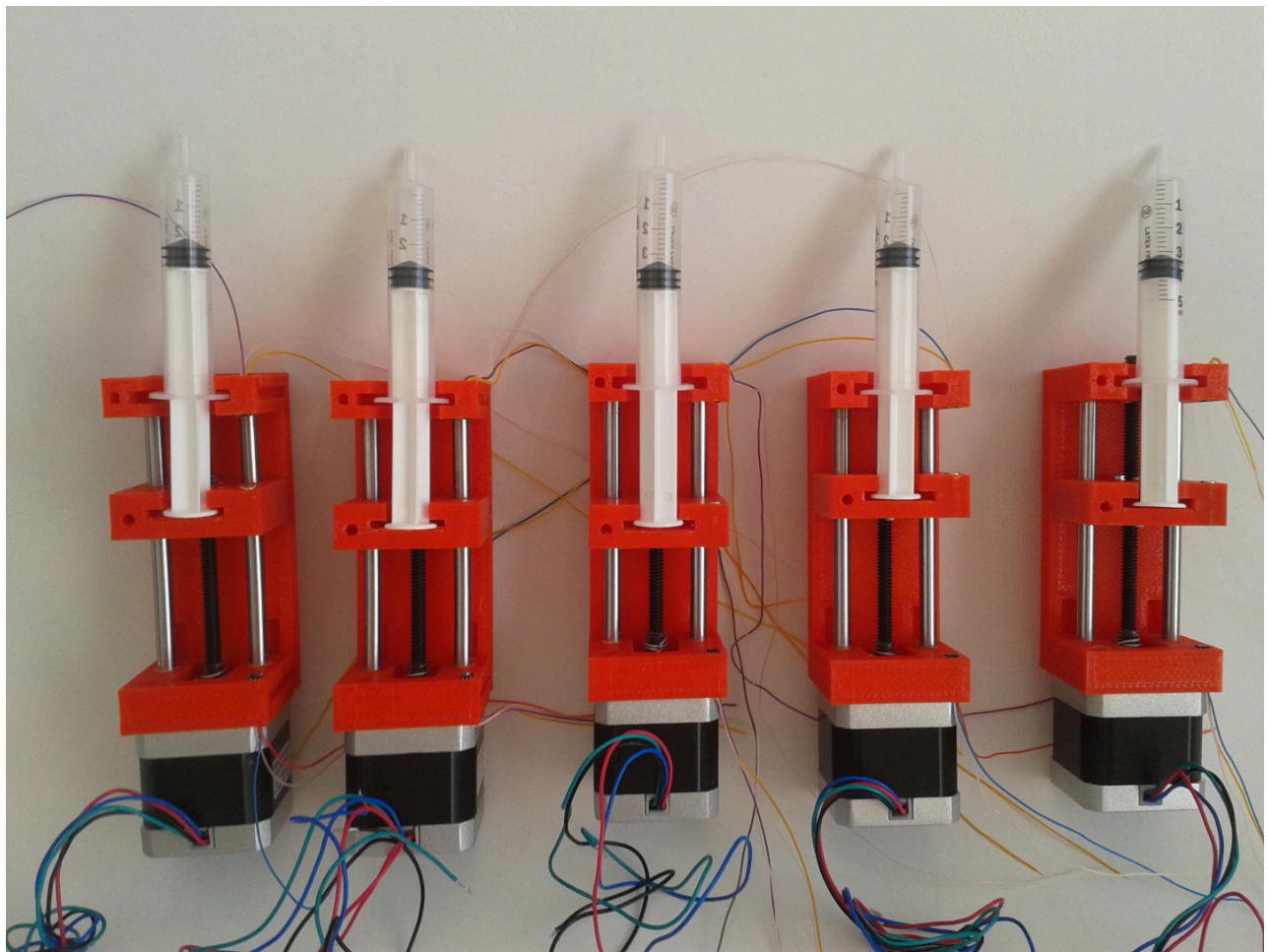


3D Printed Multi Pump System

May 18, 2023



[Aldric Negrier](#), a maker and builder in Portugal, designed an open source syringe pump system that can be 3D printed and assembled for ~\$300 USD. The system contains five pumps which may hold 5mL, 10mL, or 20mL syringes. Each pump may be programmed to function independently of the others, and it is possible to set up the rack so that there is continuous flow system between any two pumps, allowing for a smooth transition between syringes. These features, along with the low price, make it a useful tool for any lab looking to administer precise

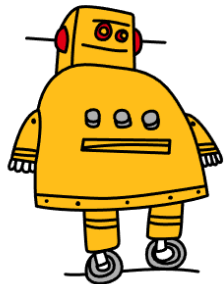
volumes, whether it be for administering fluid rewards, tastants, IV drug administration, and more.

Each pump uses an Arduino Nano V3 in order to run a stepper motor, which is used to dispense the liquid slowly, and with extreme precision (0.5 μ L for a 10mL syringe). The stepper is run on the Acellstepper library and uses Java C++ language. A general code is used for each pump, and command line inputs are needed to specify the number of steps, speed, and direction (dispensing or taking up liquid) of each pump. The entire pump rack can also be controlled simultaneously using a USB Hub.

An incredibly detailed protocol to build and implement this multipump system is available on [Instructables.com](https://www.instructables.com/)!

This research tool was created by your colleagues. Please acknowledge the Principal Investigator, cite the article in which the tool was described, and include an RRID in the Materials and Methods of your future publications. RRID:SCR_023575

Special thanks to Hannah Kibler, an undergraduate neuroscience major, for providing this project summary! This summary is part of a collection from students in a [Computational Methods for Neuroscience](#) Course at American University.



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Access this pump system via Autodesk Instructables

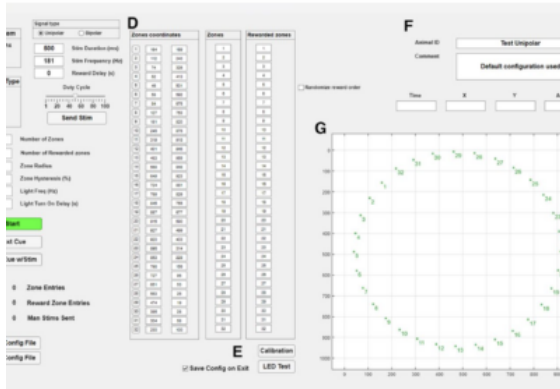
Check out the repository.

HACKADAY.IO

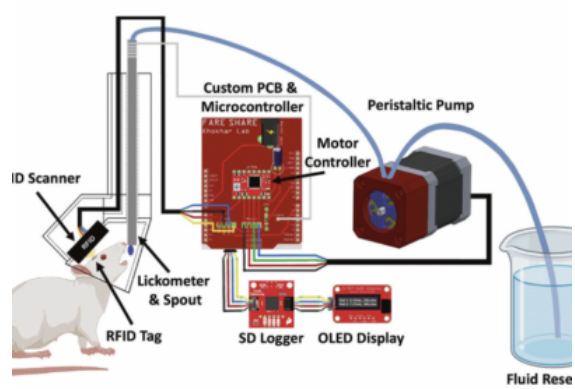
Read more about it!

Check out this Hackaday.io article about the development of this pump system and it's developer Aldric Negrier!

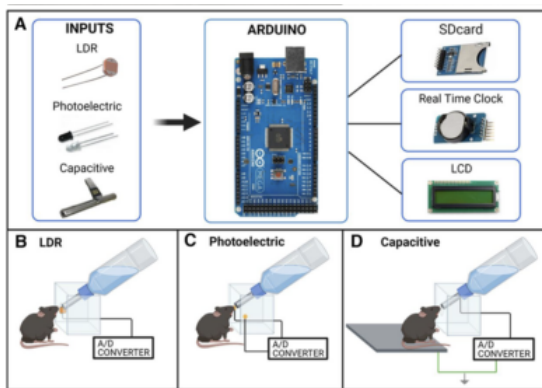
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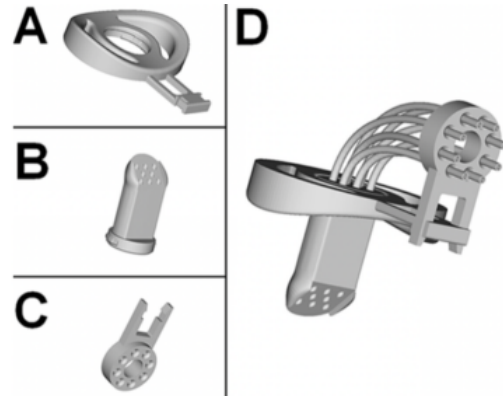
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Funding

NSF 1948181 to ML and AVK, 2021–24

Always looking for more support