

# ShotBot

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## Abstract

ShotBot is a robotic bartender that can mix cocktails from 16 different ingredients. The bottles are suspended upside down above the cup platform. Each bottle is connected to an optical bar measure that dispenses a set volume of liquid when pressed. The measures have button pins that trigger activation and take only a few seconds to refill. When a user places an order, a 2D belt system powered by stepper motors moves the cup platform underneath each bottle needed for the desired drink. The platform has a linear actuator that presses on the optical bar measures to dispense 50 mL at a time. Once all the ingredients have been dispensed, the drink will return to a starting position and present itself to the user.



## Hardware

ShotBot is composed of 3 major parts that work together to create a mixed drink. At its core is a Particle Photon which controls the 2D belt and linear actuator.

### XY Table

The XY table positions the cup platform underneath a bar optic using two stepper motors and a drive belt. The belt and motors are laid out in the same manner as an H-Bot 3D printer. The stepper motors are controlled by an Adafruit motor shield v2.3.

### Platform with Actuator

The platform with actuator holds the cup and actuator which pushes the bar optics. It is moved around by the XY table. Once in position the actuator pushes the bar optic to dispense 50 mL at a time into the cup.

### Calibration Sensor

The calibration sensors allow us to have a global (0,0) for the ShotBot that we can start at before pouring each drink. Neodymium magnets are glued to one side of the inner axis and the back right corner of the platform. The calibration sensors are hall effect sensors which detect the magnets and allow us to know when the XY table is in its start position.

## Video Demo

<https://vimeo.com/254398788>