Automated Drink Maker
Group 55

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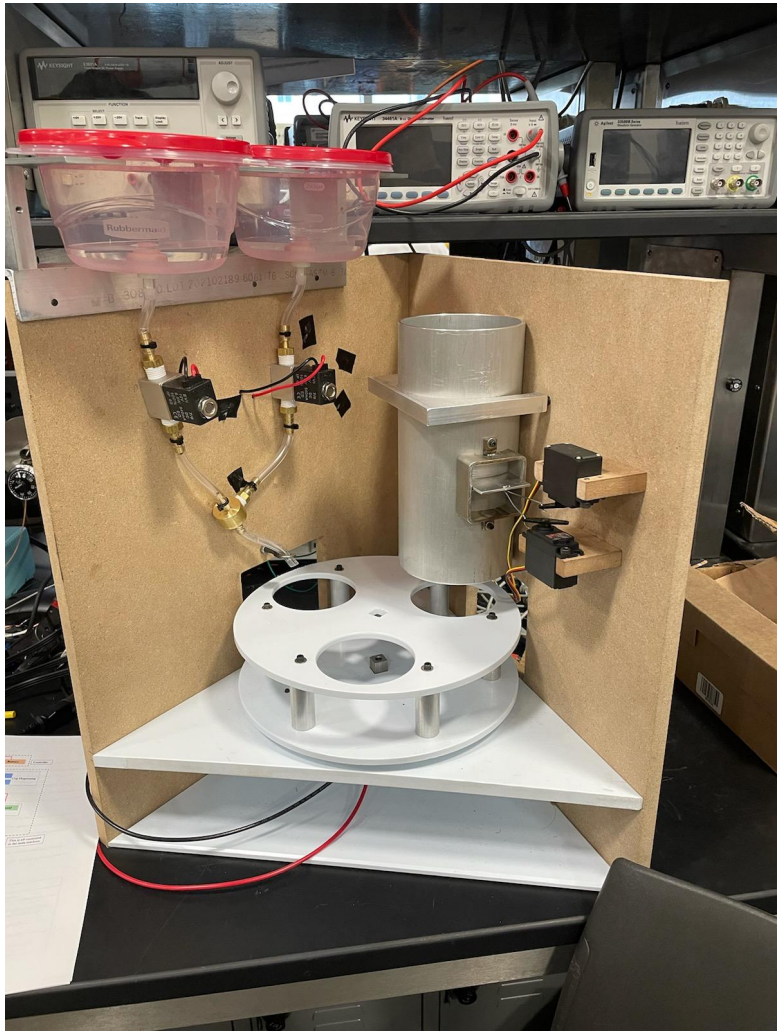
May 3rd, 2022

Problem

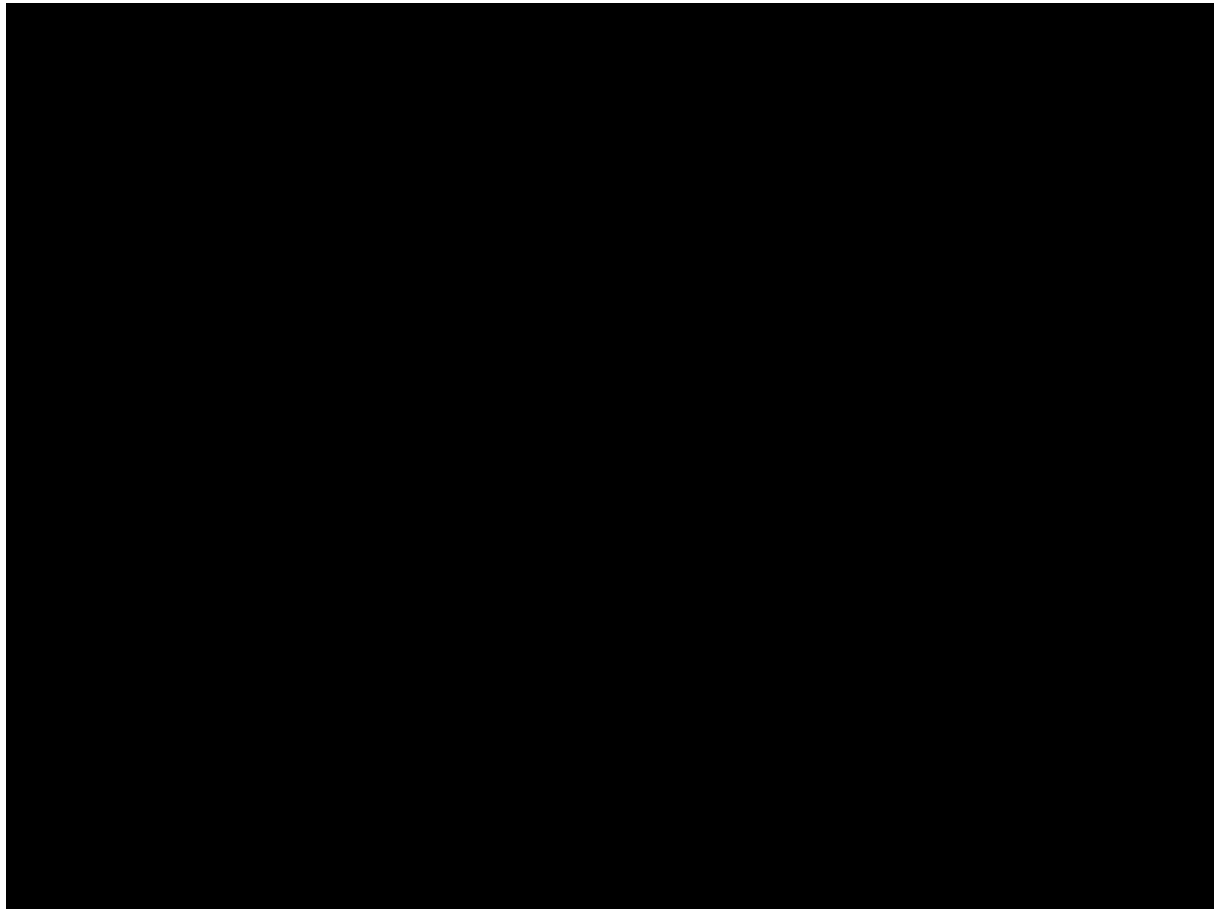
- Covid has caused a staffing shortage in restaurants
- We hope our device can lower the stress on the staff
- Also to help increase the customer satisfaction at these establishments.

Solution

- Automatic Drink Maker
- Controlled by a bluetooth receiver
- Rotary table for cup movement
- Liquid is gravity fed into the cups
- Cups are automatically dispensed onto the table



In Action



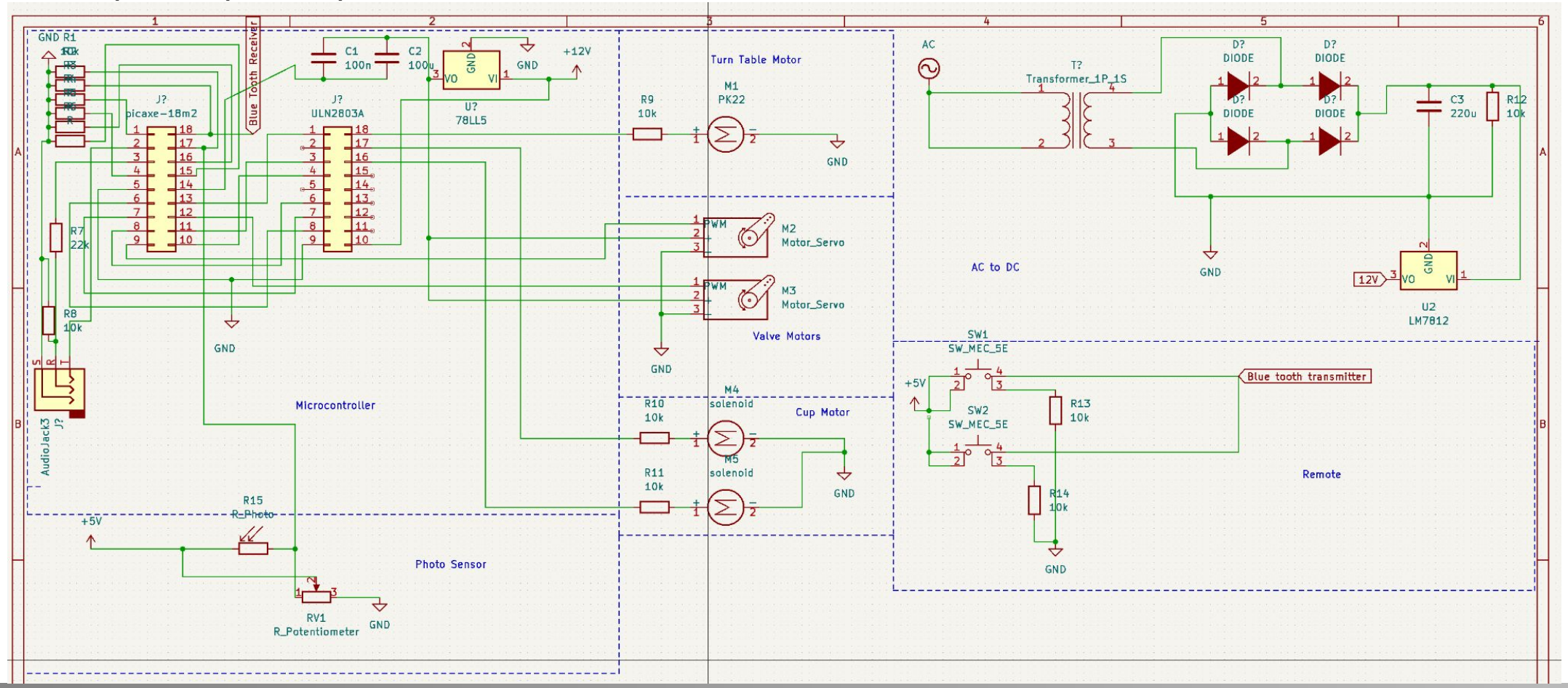
A cup drops before being rotated in order to be filled.
It is then finally rotated to the last spot waiting to be picked up.

Preliminary Design

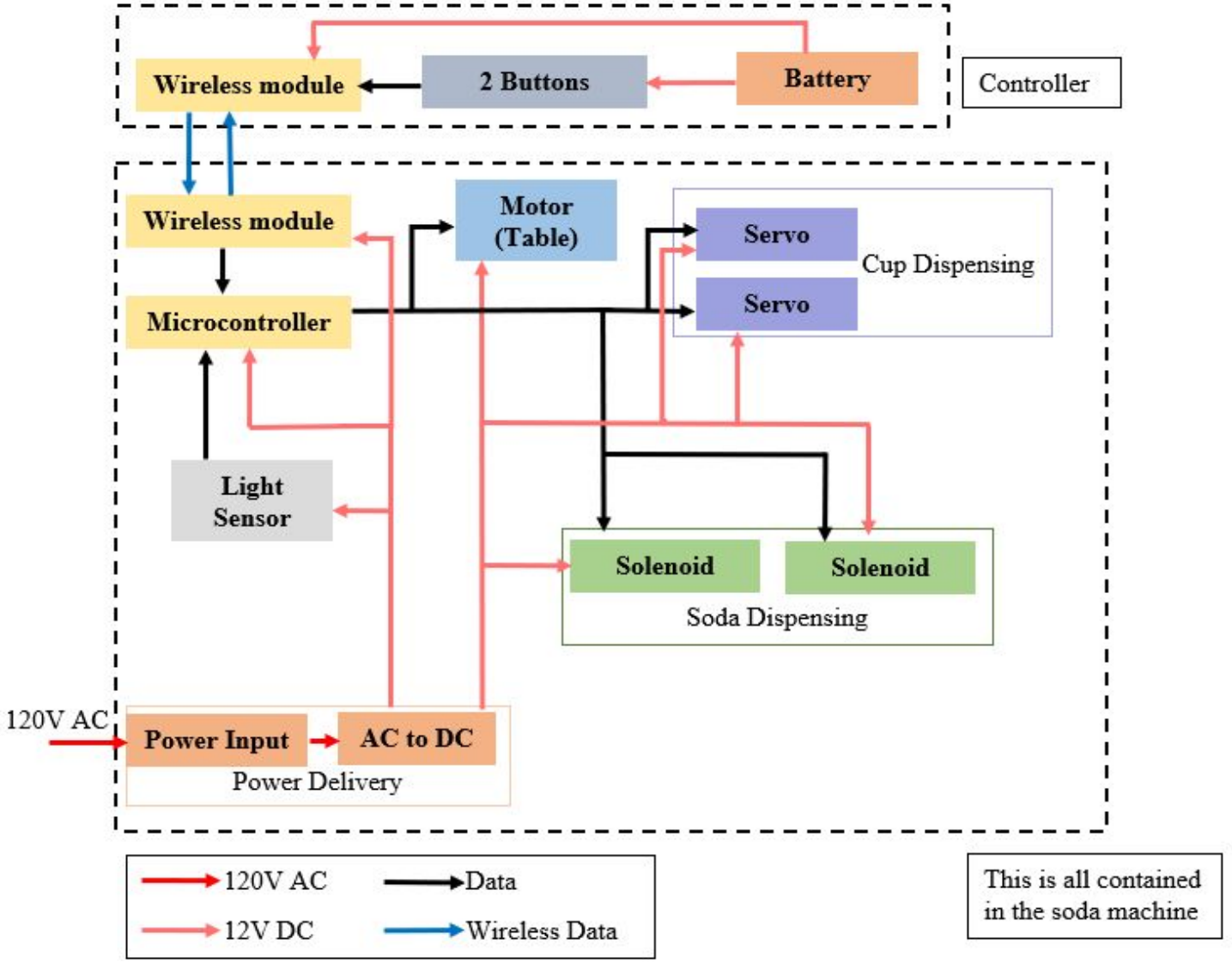
- Conveyor belt design
- Microcontroller
- Bluetooth remote
- Light sensor

Design

- Bluetooth allows communication
- Table spins cups into position
- Cups can drop one after another
- Can select multiple drinks

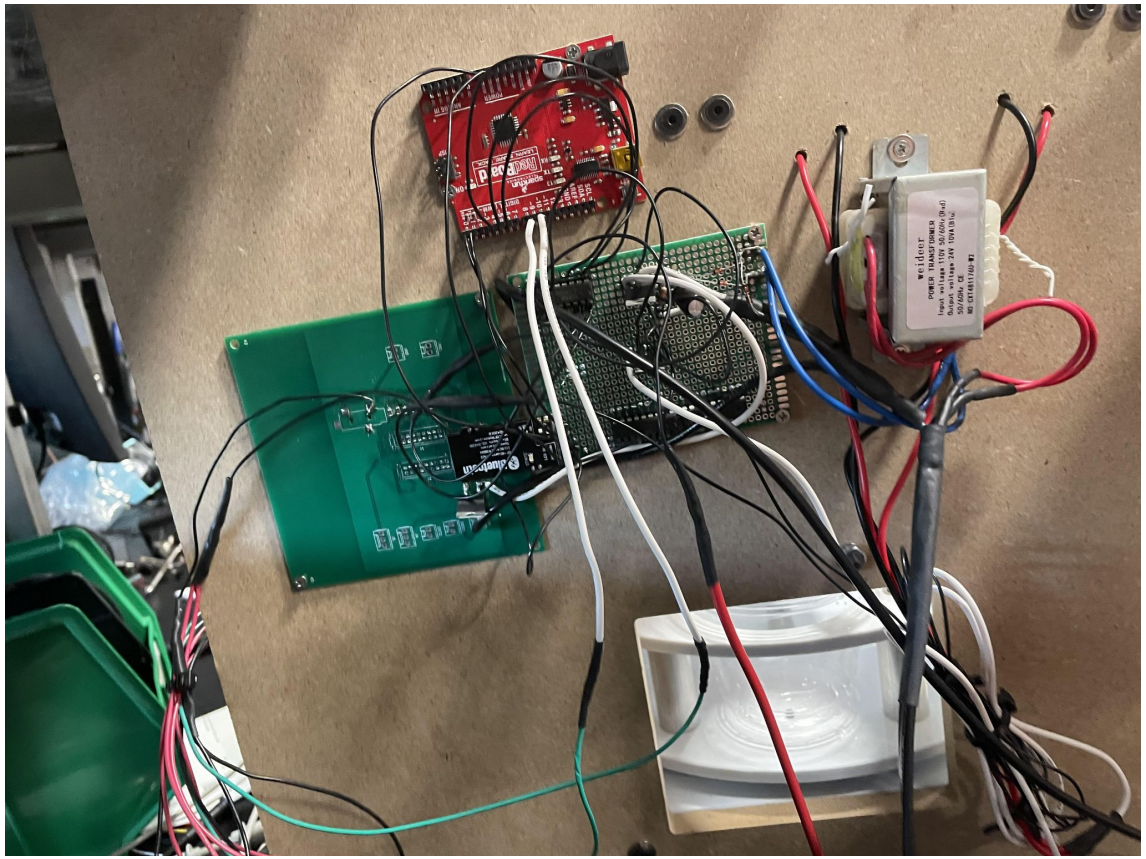


Block Diagram



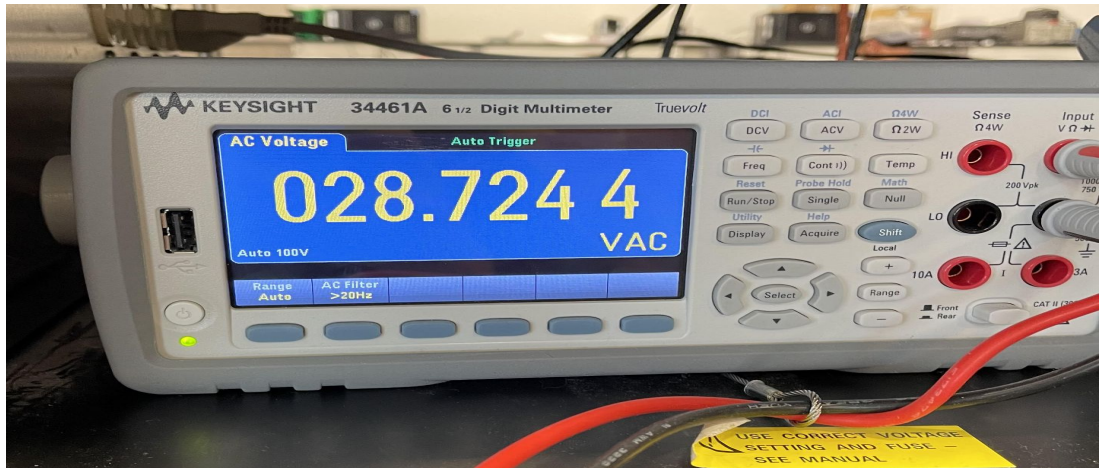
Electronics Assembly

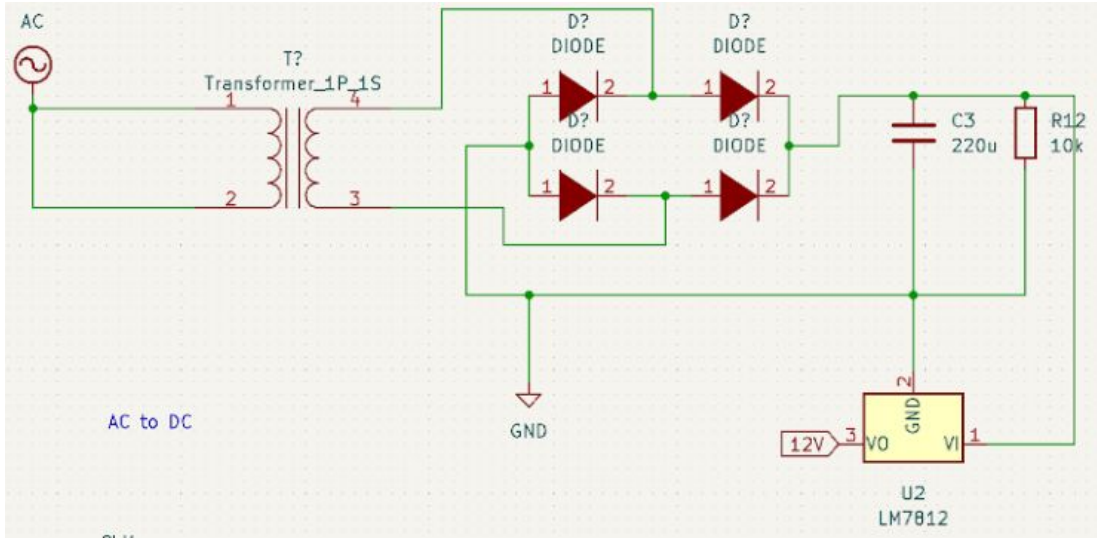
- Power supply
- Bluetooth module
- Microcontroller



AC to DC Conversion

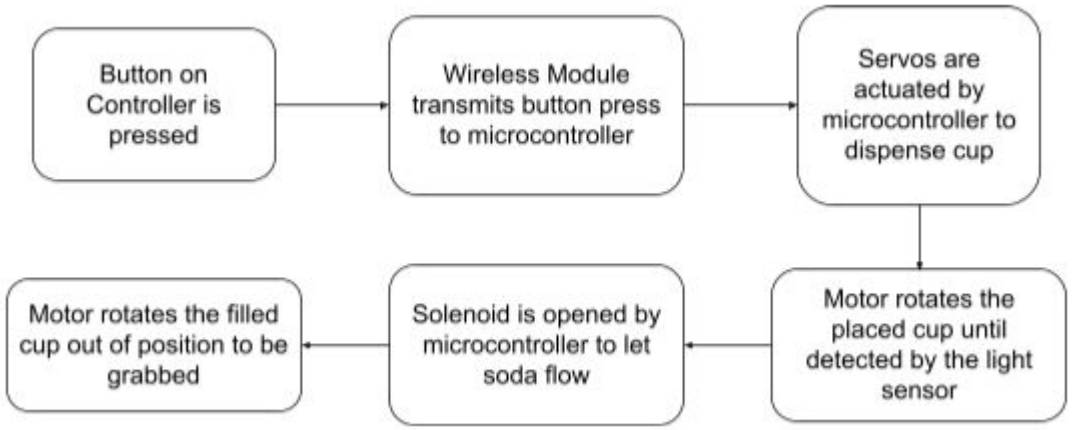
- Uses 120V AC from the wall socket
- Transformer takes it down to 24V AC
- Diodes change from AC to DC
- The first voltage regulator drops the voltage down to 12V DC
- The second voltages regulator drops the voltage down to 5V DC





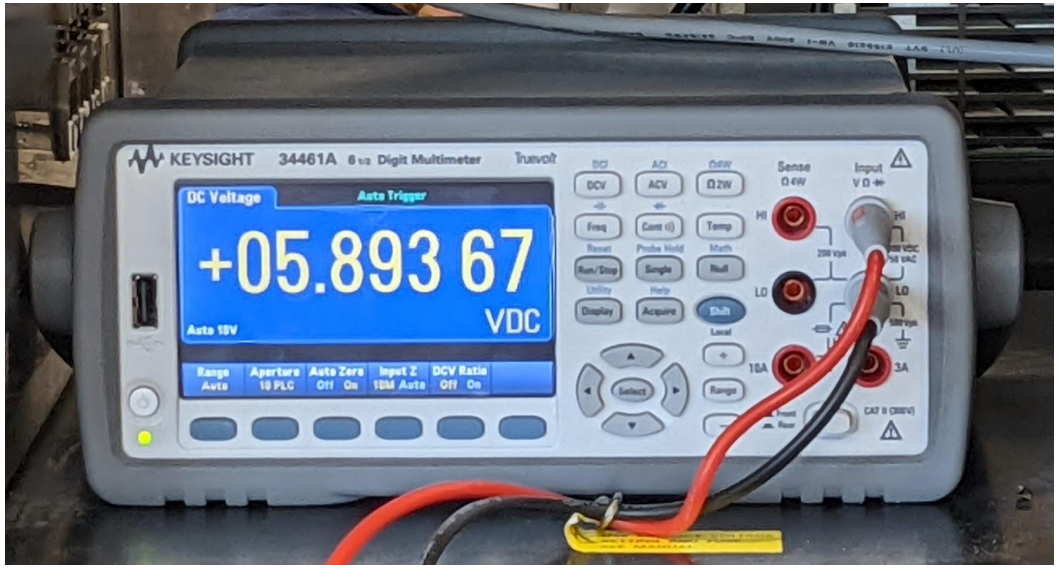
Bluetooth

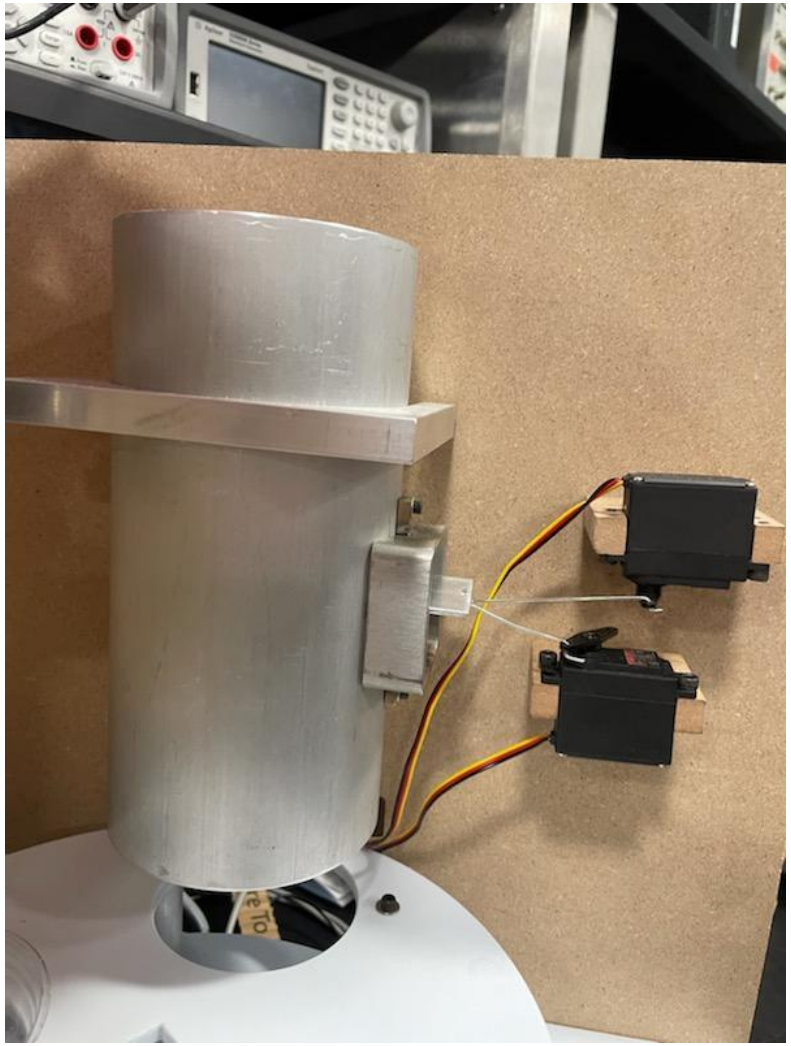
- DFRobot TEL0026 Bluetooth module
- Connect to Bluetooth terminal Android app



Cup Dropper

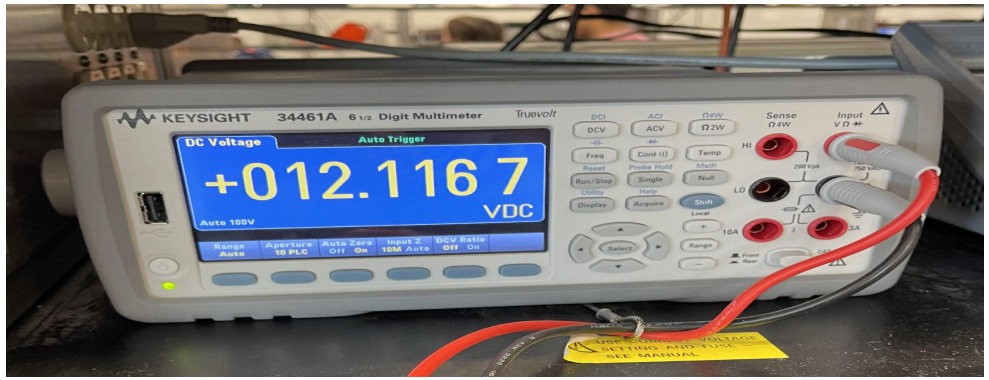
- Two servos to control the cup stack
- Bottom one drops the cup, top one reloads a cup into the bottom
- Controlled by PWM from the microcontroller
- Ran off of 5V power verified for RV

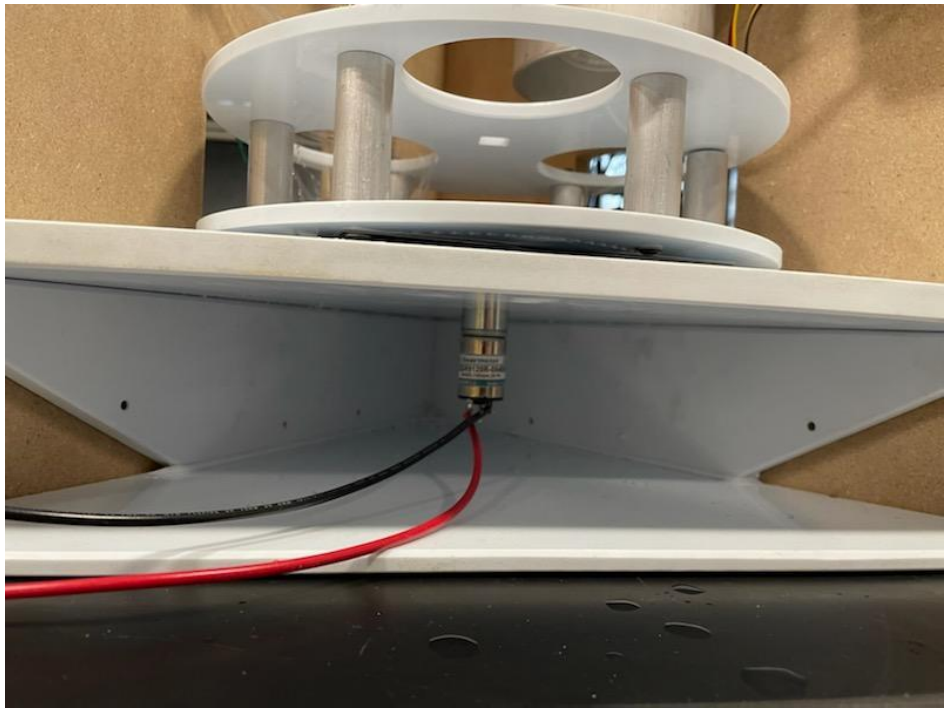




Table

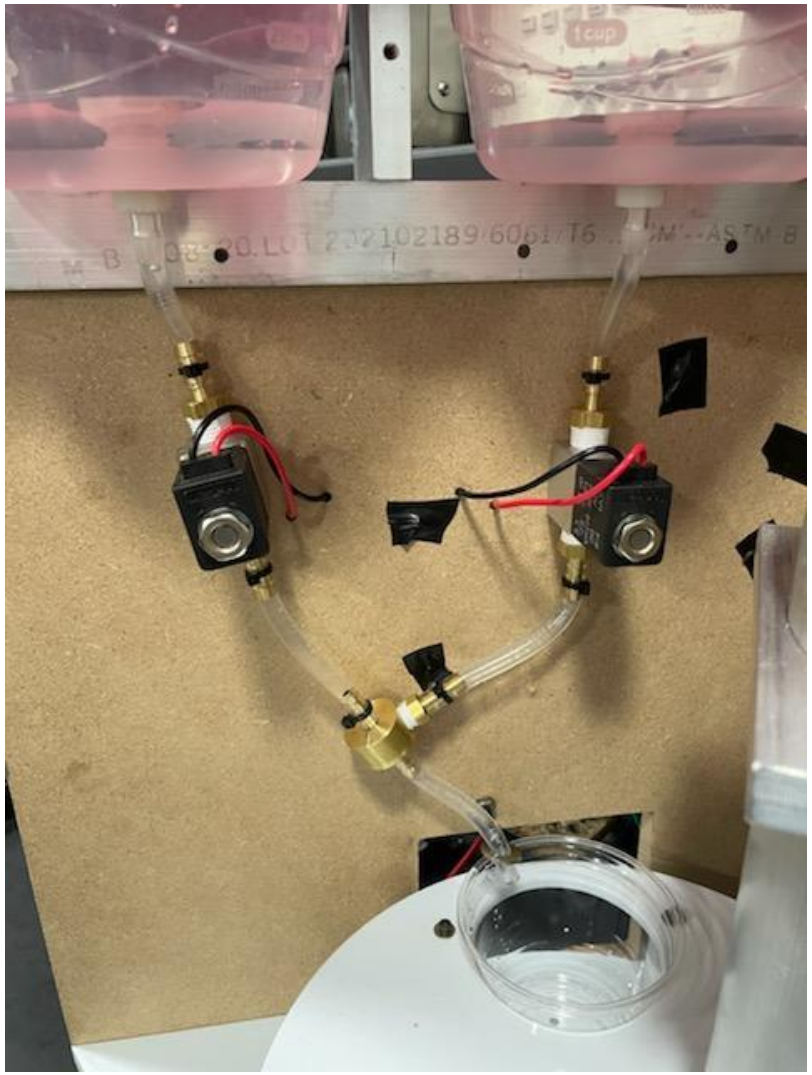
- Controlled by a DC motor
- Future models would implement a stepper motor for finer control
- Rests on ball bearings to limit friction and maintain flat angle
- Input to motor is 12V DC





Drink Dispenser

- Works with two solenoid valves
- Gravity fed system
- Allows choice of which drink from remote
- Amount dispensed based on time



Challenges

- Servo and table timing
- Microcontroller- Picaxe 18M2
- Bluetooth setup
- PCB

Conclusion

- There are a few issues we ran into with this preliminary design
  - DC motor
  - Proprietary Bluetooth adapter
  - Out of date microcontroller
- This proof of concept more than meets our expectations even with these shortcomings
- Further work
  - More drinks
  - Different cup sizes

Acknowledgements

- Our TA, Akshat
- The Machine Shop

Thank you

Any questions?

The Grainger College of Engineering

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