Shaken Not Stirred: An Automatic Cold Brew Inverter

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Materials:

- Touchscreen
- Raspberry Pi
- RAMBo
- PVC and wood frame
- NEMA 17 motor in wooden frame
- Mason jar

Device Setup:

1. Build/use ½ inch PVC frame with central axle.
2. Laser cut piece that snugly fits over the motor axle and into the PVC axle and glue. (pdf files are attached)
3. Laser cut boxes for the Rambo board, motor, and mason jar. (pdf files are attached)
4. Fit jar housing within the PVC axle and glue.
5. Follow online instructions to setup Raspberry Pi touch screen.

https://www.element14.com/community/docs/DOC-78156/l/raspberry-pi-7-touchscreen-display

6. Download software from “agoldmansachs” github. https://github.com/agoldmansachs/421_521_final_project

Device Operation:

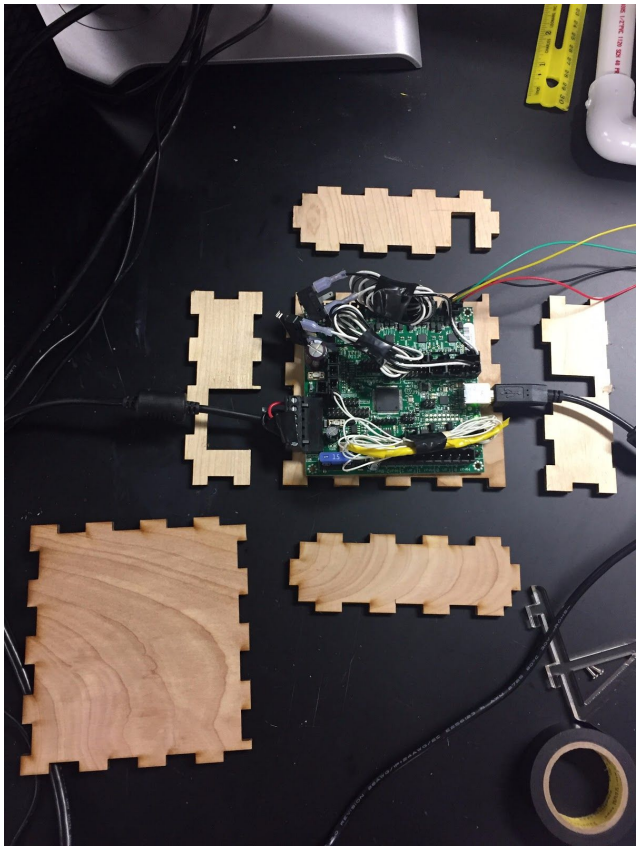
1. Plug in Raspberry Pi power supply and RAMBo power supply.
    a. Ensure that the lights on both boards are flashing before moving on.
    b. Ensure that the user interface on the touch screen lights up.
2. Slide motor axle into acrylic hole in the side of the PVC frame.
3. Select your preferences from the three drop down menus on the touchscreen.
4. Read instructions in textbox of the water to coffee grounds ratio and the temperature of water to add.
5. Add those ingredients to the mason jar and cap the jar.
6. Place mason jar in wooden holding carriage connected to the PVC frame.
7. Place the entire device into the fridge.
8. Press the “SHAKE!” button.
9. After the shaking period has ended, remove the mason jar from the device.
10. Filter the coffee and enjoy!

Troubleshooting:

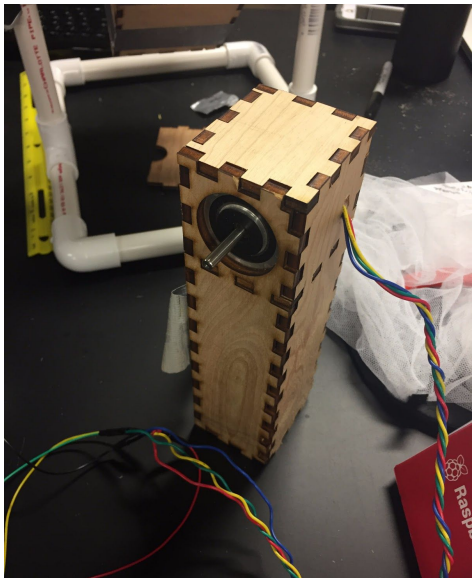
- Make sure all power cords are plugged in
- Make sure power inlets are secure in RAMBo board.

- If holding the touchscreen and raspberry pi so that the red and black wires are closest to you:
    - Red wire from touchscreen must connect to the first pin on the bottom right of the Raspberry Pi (pin 2).
    - Black wire from the touchscreen must connect to the third pin on the bottom right of the Raspberry Pi (pin 6).
- Make sure that the power supply to the Raspberry Pi is securely connected to the Pi.
- Ensure that the cord connecting the RAMBo and Raspberry Pi are secure at both ends.
- If the motor is spinning independent of the mason jar carriage, make sure the axle's flat edge is aligned with the acrylic piece in the PVC frame's flat edge and that the axle is pushed into the acrylic piece.
- On black plastic box on RAMBo, there should be 4 wires fitted securely within the box, which connects to the power supply of the board.
    - Going from left to right, the wires should alternate from red to black to red to black in consecutive plugs.

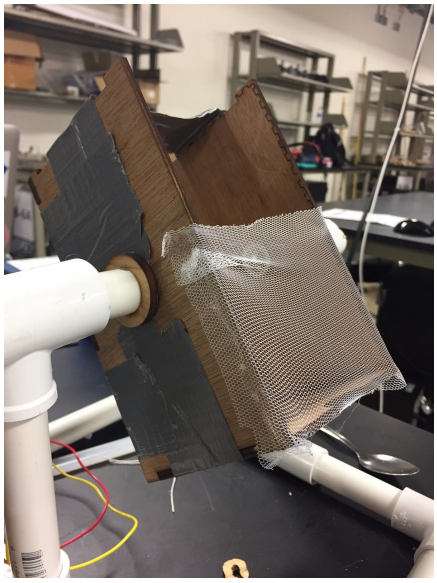
RAMBo and disassembled housing:



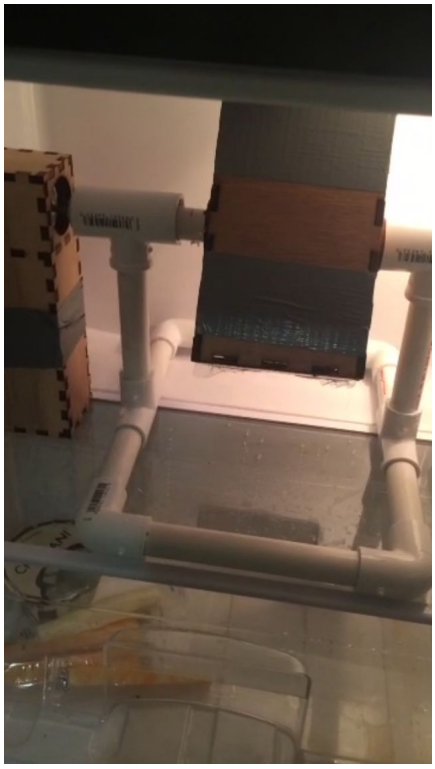
Motor and housing:



Mason jar carriage:



PVC frame with motor attached:



Repurposing Equipment:

- All code for this project can be found at our GitHub page: https://github.com/agoldmansachs/421_521_final_project.git.
    - Check the file paths used in the scripts and amend them as necessary.
- All AutoCAD drawings for the laser cut pieces are attached to this document and can be downloaded from the GitHub page as well.

Files:
PDF and DWG files can be found here:
https://github.com/agoldmansachs/421_521_final_project