Home Cleaning Robots

Group 11:

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Introduction

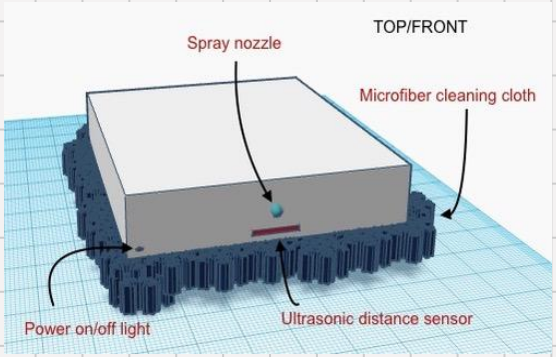
We designed our robots to help eliminate the time wasted by mundane cleaning tasks. Humans spend far too much time mindlessly picking up after themselves. With the technology available to us now, there’s no excuse for this. Our robots aim to automate some of these tasks, giving our customers more time to be productive.

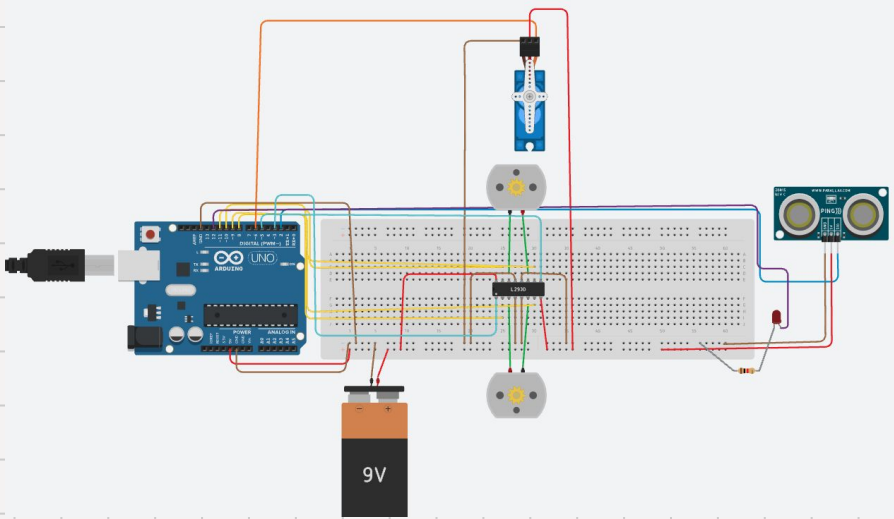
Proposed Robots

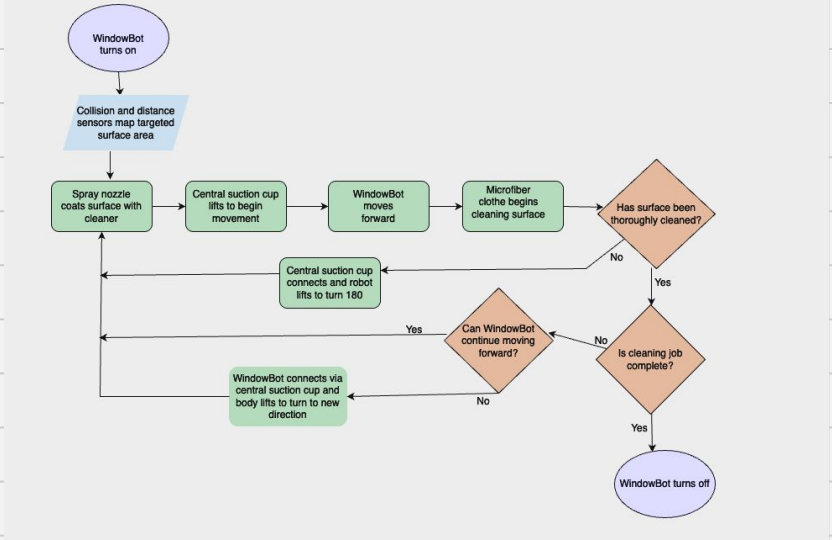
1. WindowBot
2. FloorBot
3. ToiletBot
4. AirBot

WindowBot

The WindowBot is designed to move along the surface of the window, cleaning the entire surface. It is designed to function independently using ultrasonic distance sensors that map the surface, prevent collision, and detect lingering dust or dirt on the window, ensuring a thorough cleaning.

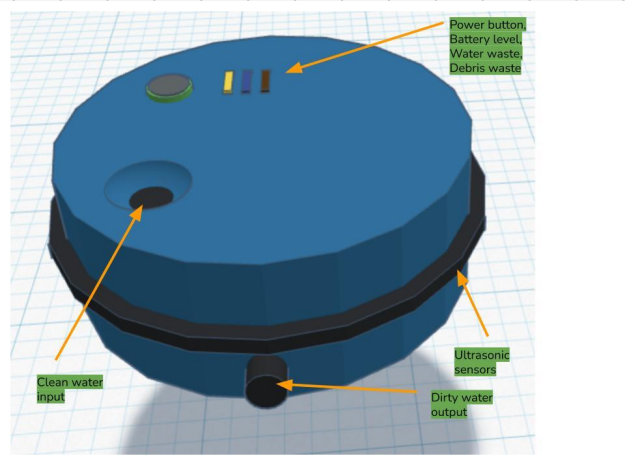


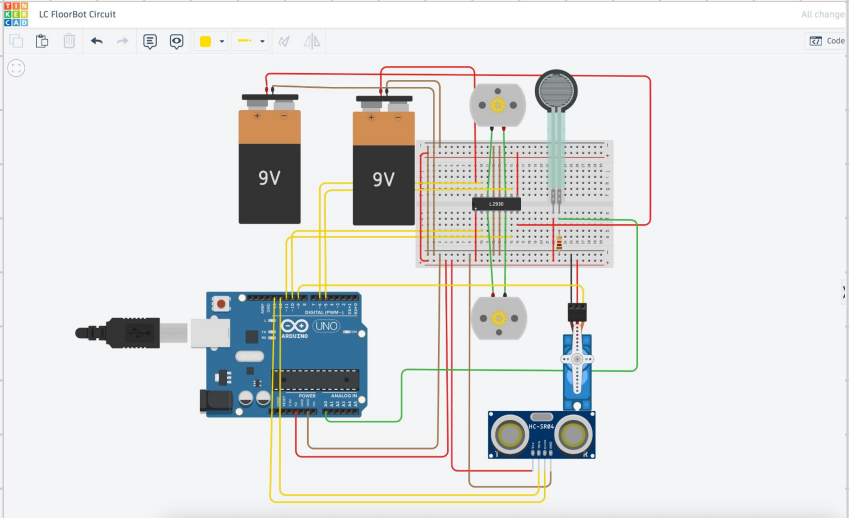


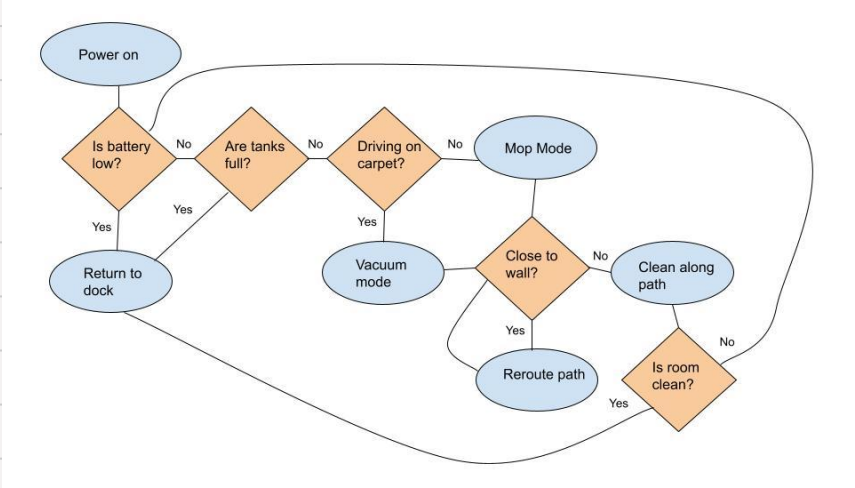


FloorBot

The FloorBot is designed to independently drive itself around the house and change its cleaning method based on the floor's surface. It features both a mop and a vacuum that can be cycled between based on input from vibration sensors along the bottom. The mop water itself is dispensed through jets on the bottom of the device.

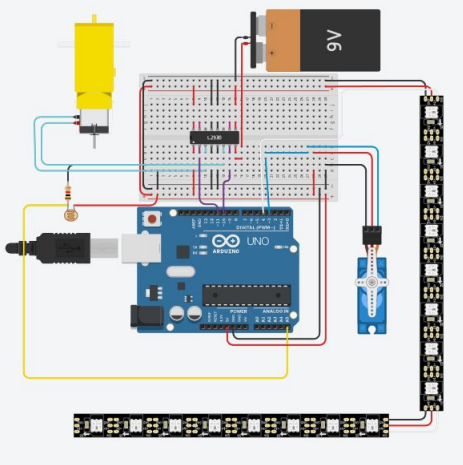


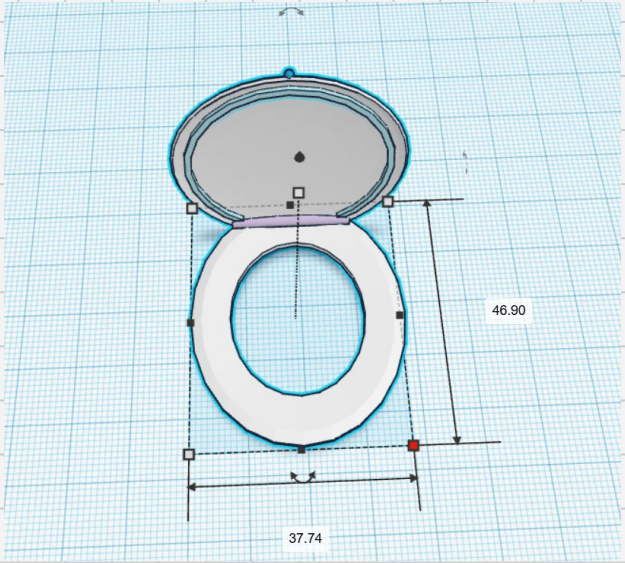


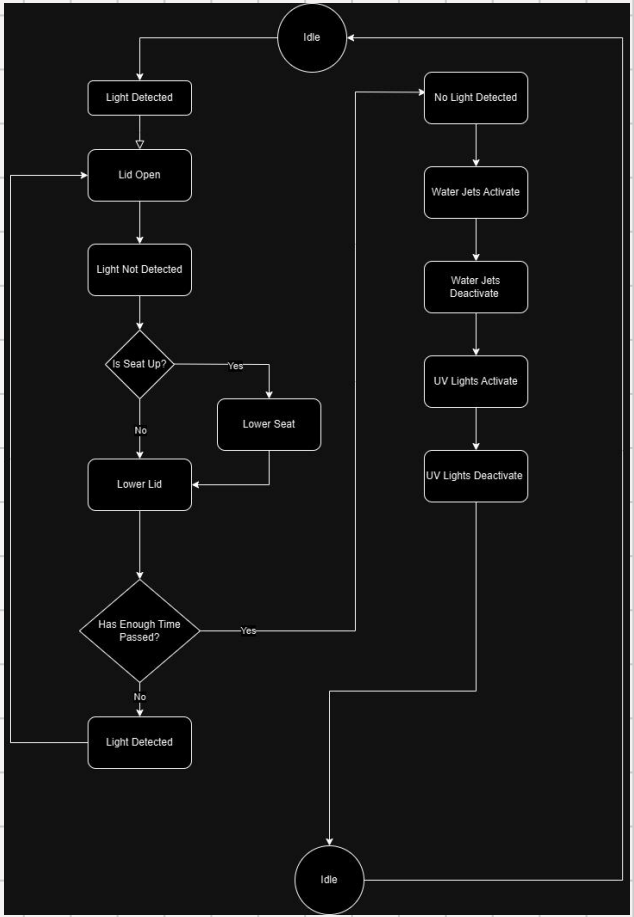


ToiletBot

The ToiletBot is a smart, light activated toilet seat that cleans and sanitizes the interior of the bowl and sanitizes the seat after each use. It features a refillable sanitizing solution reservoir, high pressure water jets, and powerful UV lights located on the underside of the seat and lid.

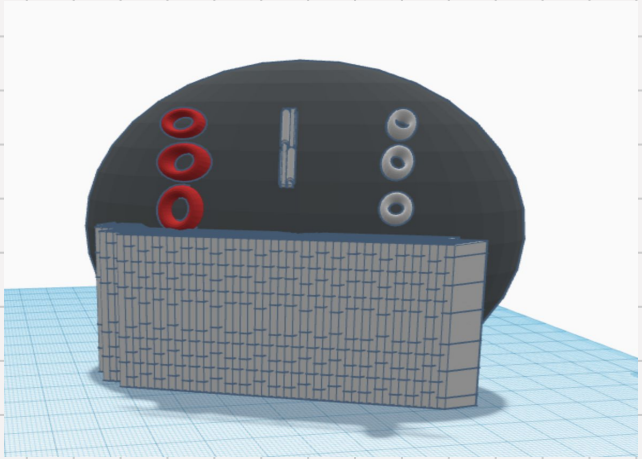


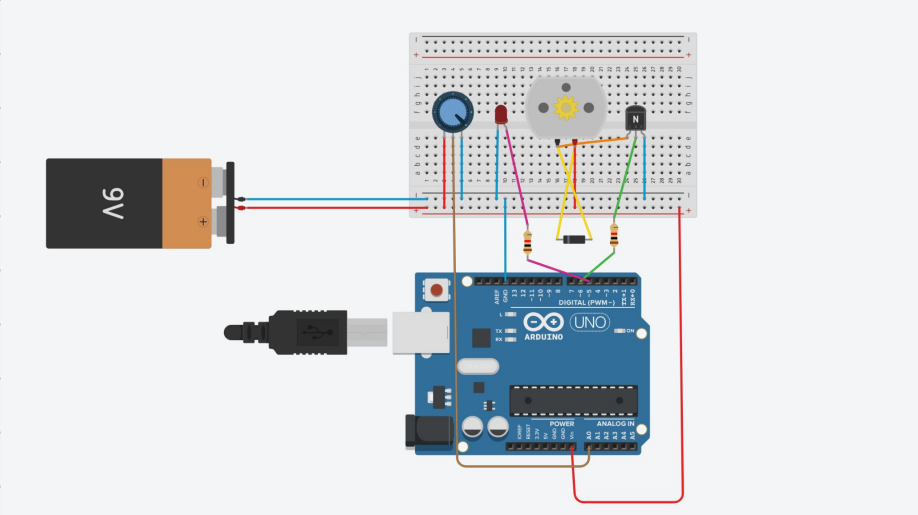


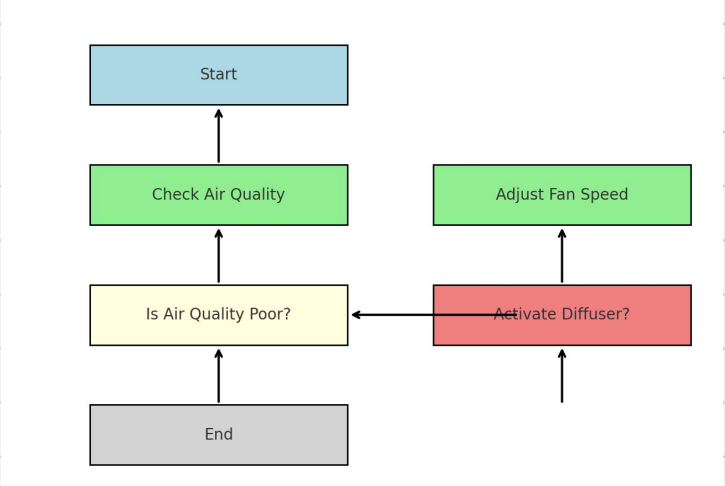


AirBot

The AirBot is designed to autonomously monitor and improve air quality in indoor environments while optionally diffusing pleasant scents. It features air intake vents on the sides that draw in surrounding air, passing it through an internal purification system equipped with HEPA and activated carbon filters.







Value Added

ToiletBot improves on this by being condensed into a smart toilet seat

FloorBot improves on the *Roomba* by being able to smart mop

AirBot improves on this by being more efficient and allowing for scent diffusal

WindowBot improves on this by being compact and cheap to manufacture

Conclusion

This project introduced us to the idea of working with a team of engineers under strict deadlines. Some of us were also introduced to practical skills such as working with an *Arduino* and creating CAD models on *TinkerCAD*. Overall, we're happy with our results and truly feel that they could be successful designs if further invested in.

Link to the presentation video:

https://youtu.be/bnYlUUZI9Qw.