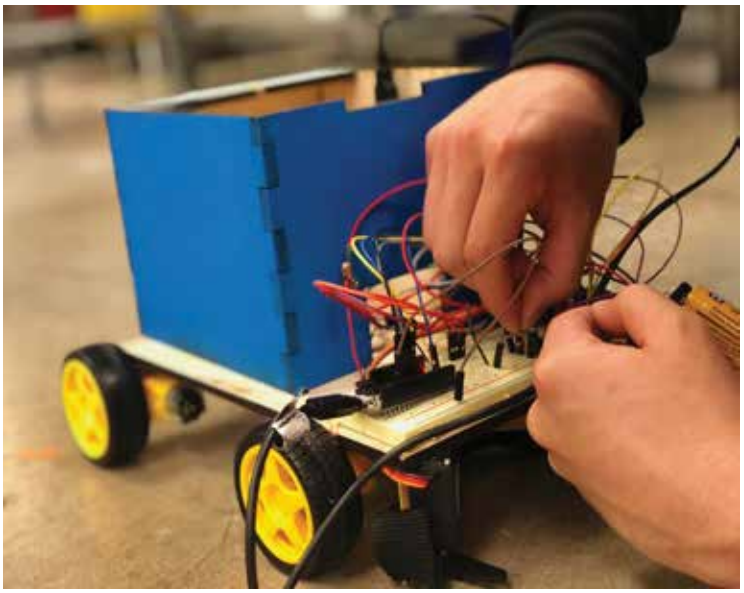
Zoomba:

Don't Clean Up After The Party, Be The Party



PHILOSOPHY

We wanted to question the notion that technology exists only to make our lives easier. Zoomba is the anti-thesis of the Roomba, which is a common household robot nowadays, cleaning up the mess on the floor without complaint and nothing more.

Our team decides to inject personality into Zoomba, turning it into a creature made of wheels, servos, LED lights, and confetti that it catapults to celebrate its 'imperfections' or in jest of humans who expect it to be a dutiful robot. Instead of silently collecting and disposing trash, Zoomba pretends to rid the space of trash by tucking trash under its belly, until it finds the right moment to pause and jettisons confetti, creating a beautiful mess all over again.

When we feel frustrated that a piece of technology or machine doesn't perform its desired function, Zoomba is here to remind us that life is not always going to be neat or how we've pictured it to be. The point is to party along the journey.

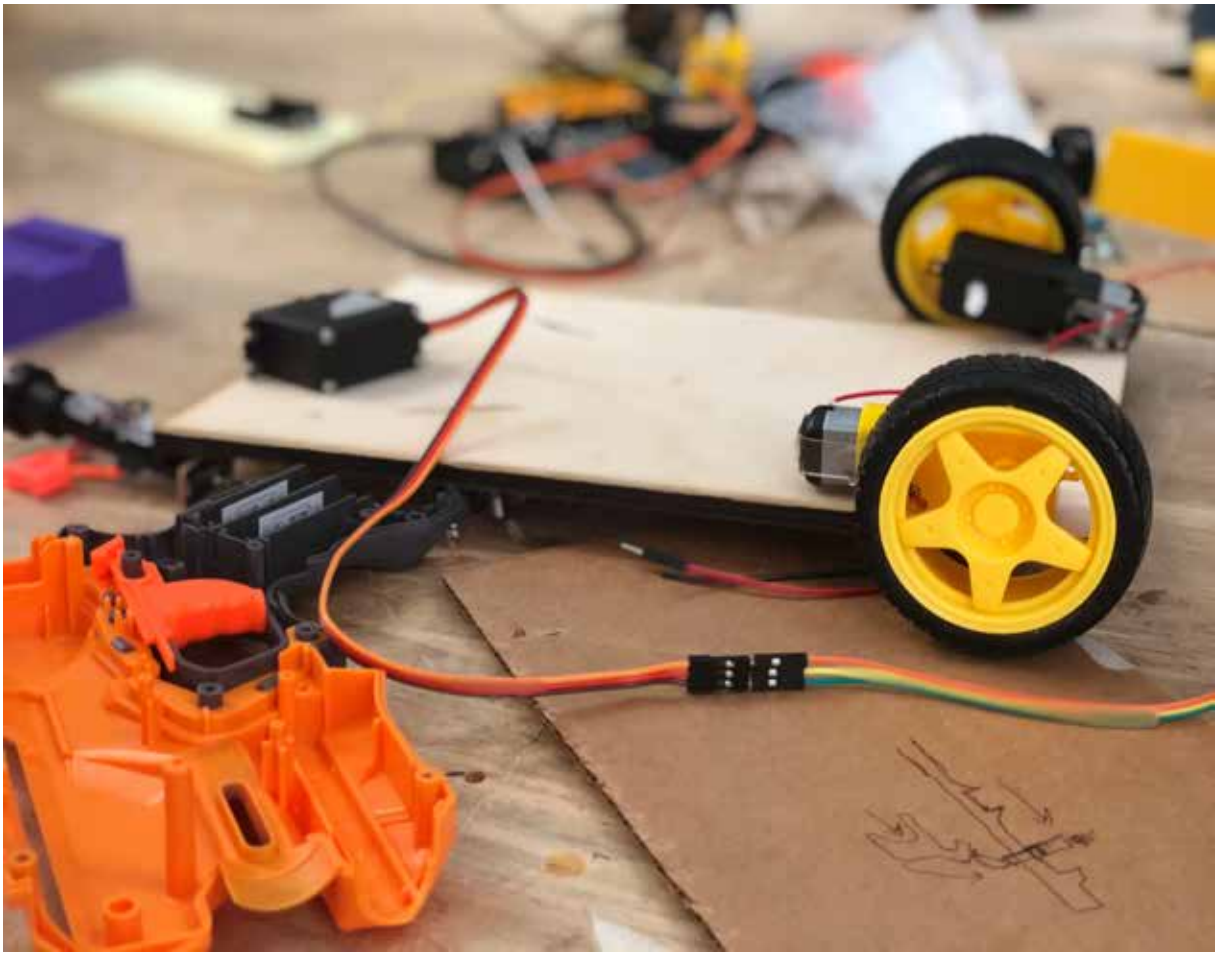
Alvin Tan, Kailin Li, and Sandy Chu

MATERIALS

We used four Arduino wheels, a rotating wheel to steer it, the spring from a Nerf gun, sonar sensors, and several LED sensors. We used laser cutter to construct our Zoomba to resemble the rectangular shape of a garbage truck. We also 3D printed blocks to hold our battery pack in place.

PROCESS

To simplify our task, we install birght LED lights underneath the body of the robot and LED sensors. As the amount of trash accumulates to a certain point, the clutter will dim the LED's brightness, causing a change in the analogRead values. That's when Zoomba stops moving and releases the spring, which catapults as much confetti as possible out of its chamber.



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CHALLENGES

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The sonar sensors we purchased did not seem to pick up differences in an object being right in front of it vs. having no obstacle at all. (The distance reported ranged from 118cm to 121cm, regardless of the actual objects' position) This posed a problem because we planned to use the sonar sensors to detect trash in Zoomba's immediate surroundings and sweep it under its body. We decided to use time as a proxy instead in the end.

Another sensor issue we encountered was with the **LED light sensors.** The ones we initially had were fluctuated tooweakly to produce meaningful results that we then could use to calibrate and determine the time for launching the confetti. This was resolved by talking to our instructor J.D., who offered stronger and brighter LED lights. We then had to solder each of the 4 lights to 2 wires.

Lastly, our Nerf gun's spring did not fit into the box configuration we had, and we decided to use a servo and attach it to a long wooen stick that resembles that of a mailbox, and have that as the moving part that throws out the confetti.