Final Project Description

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Goal:

This is a project for office people use. I want to build a vehicle that can transport some food or snacks for people when they are working. When they feel hungry or want to eat something, they can just press a button or something else, the vehicle will bring some food to them. I just want people to enjoy a better office life in a convenient way.

Parts List:

Arduino board x 1
Arduino shield x 1
Infrared ray transmit ball x 1
Infrared ray locator x 1
Servo motor x 1
DC motor x 2
Battery connection x 1
AA battery x 4

Process:

At first, I wanted to use bluetooth to control it. Michael gave me some suggestion that bluetooth can't know the right direction, infrared ray might be a good way to achieve it. Then I refined my proposal and tried to use infrared ray to control my vehicle.

The major part of my vehicle is an infrared ray locator and an infrared ray transmit ball. The ball will transmit 1200Hz infrared ray. The locator will know the direction and the distance of this ball. The most difficult part is converting the locator's number to a servo motor degree. The locator will acquire the signal from 360 degrees, however, the servo motor can only rotate 180 degrees. I also tried a lot of different things to achieve this goal such as stepper motor and H-bridge module, but these aren't good ways for this product because they will make it too complex. Another problem is that the number from the infrared ray locator will be influenced by the situation I set it and the moving of the vehicle. The most useful way to solve it is testing many times. Finally, after several times testing, I put the locator in the front of the vehicle where has few distractions, so the number is stable. I also divided the direction into 13 different groups and each of them corresponding a specific degree of the servo motor, so it moves precisely.

Finally, I achieved my goal! When the ball is in front of the vehicle, it will move forward to the ball. When the ball is behind the vehicle, the vehicle will turn around then move forward to the ball. When the ball is closed to the vehicle, the vehicle will stop, so users are able to take some snacks from it. This vehicle achieved my original goal and it works well.


Vicky's
Candy House