Wall-E Prototype
ECE 153B
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Proposal Link: https://sites.google.com/view/walleprototype/home

Overview:

Use the STM32L476 to create a basic prototype of the Wall-E robot from Disney Pixar's film. Connect two SG90 Servo Motors to power and control the wheels of the robot. Each side of the robot will have 2 wheels (for a total of 4 wheels) which will be powered by 1 motor (for a total of 2 motors). Additionally, connect the HC- SR04 Ultrasonic Sensor on the front of the robot so it is able to detect potential collisions and prevent them from happening. The robot will be controlled by the Termite terminal on a computer, which will send commands to the HC-05 bluetooth receiver connected to the STM board. Will also connect the TC74 temperature sensor to monitor the surrounding temperatures to ensure a safe operating temperature. If the temperature exceeds a certain threshold then we will program it to shut down functionality in an attempt to preserve itself. Overall, the aim of this project is to create a basic version of Wall-E that can keep being expanded over time.

Peripherals:

- 2 SG90 Servo Motors
- 1 HC-SR04 Bluetooth Module
- 1 HC-05 Ultrasonic Sensor
- 1 TC74 Temperature Sensor

Protocols:

- PWM
- I2C
- UART

Goals:

- Build a semi autonomous vehicle that can traverse rooms and be aware of its surroundings to some extent.
- First, connect motors to have a frame that can move forward or backward.
- Second, connect bluetooth module to STM32 so that it can send commands to the motors to enable control of the direction the robot moves in
- Third, connect ultrasonic sensors so that it can anticipate collisions and prevent them
- Ultimately, connect temperature sensor so that the robot can detect for overheating.
- If time allows, connect other sensors like moisture/humidity sensors to add additional safety features for robot.

Group Responsibilities:

Moises: Ensure code is written properly.

Rafael Luna Cruz: Ensure all parts are working and connected properly.