

CYBOT PLATFORM

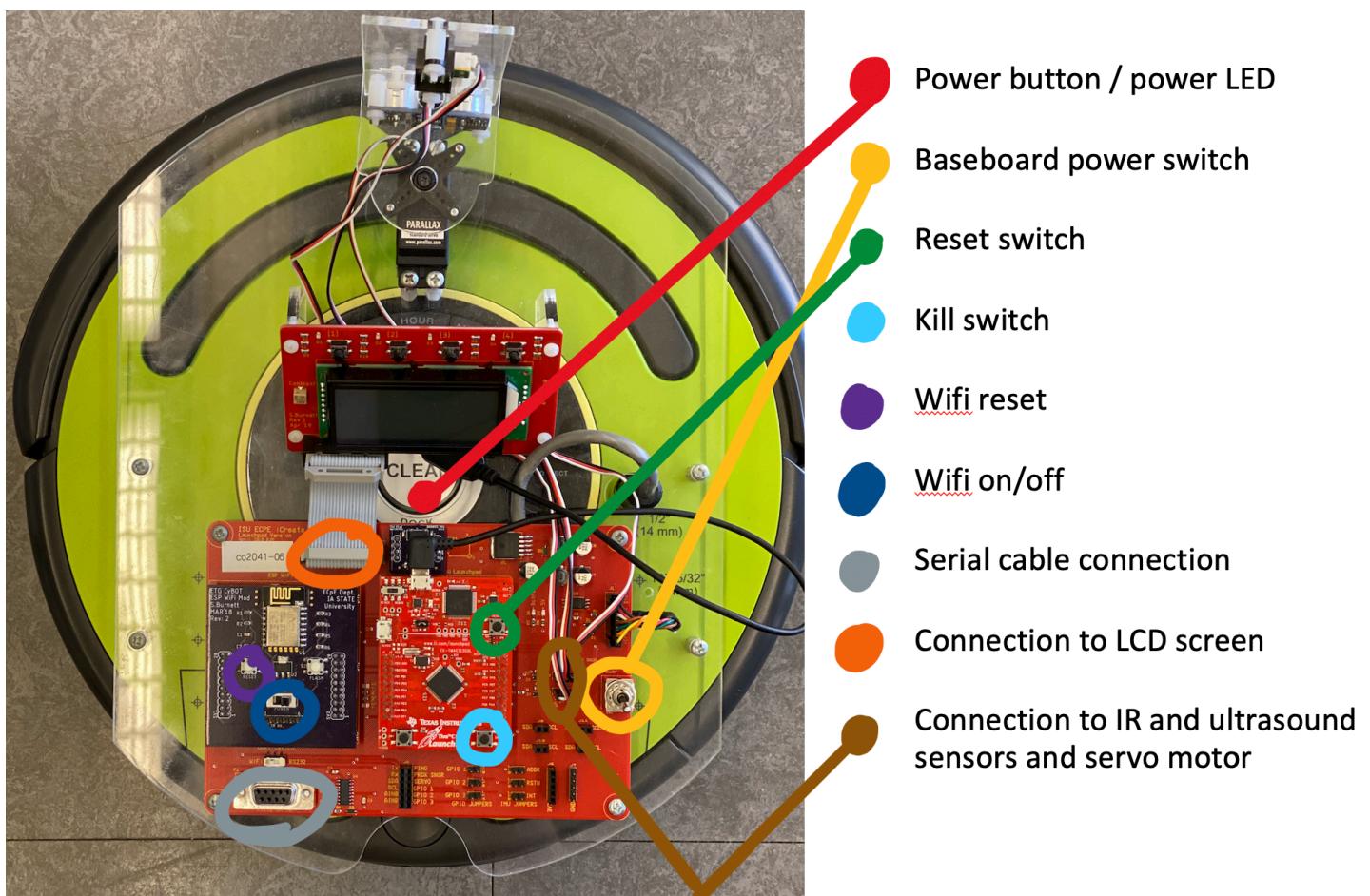
You will program the microcontroller unit on the TI Launchpad to control the iRobot by sending commands using an API (Application Programming Interface) called *Open Interface* to communicate.

1. The **iRobot Create 2** has many sensors, including:

- Omnidirectional IR sensor
- Left & right bump sensors
- Four cliff sensors along the front
- Wall sensor
- Drop sensors, one on each wheel

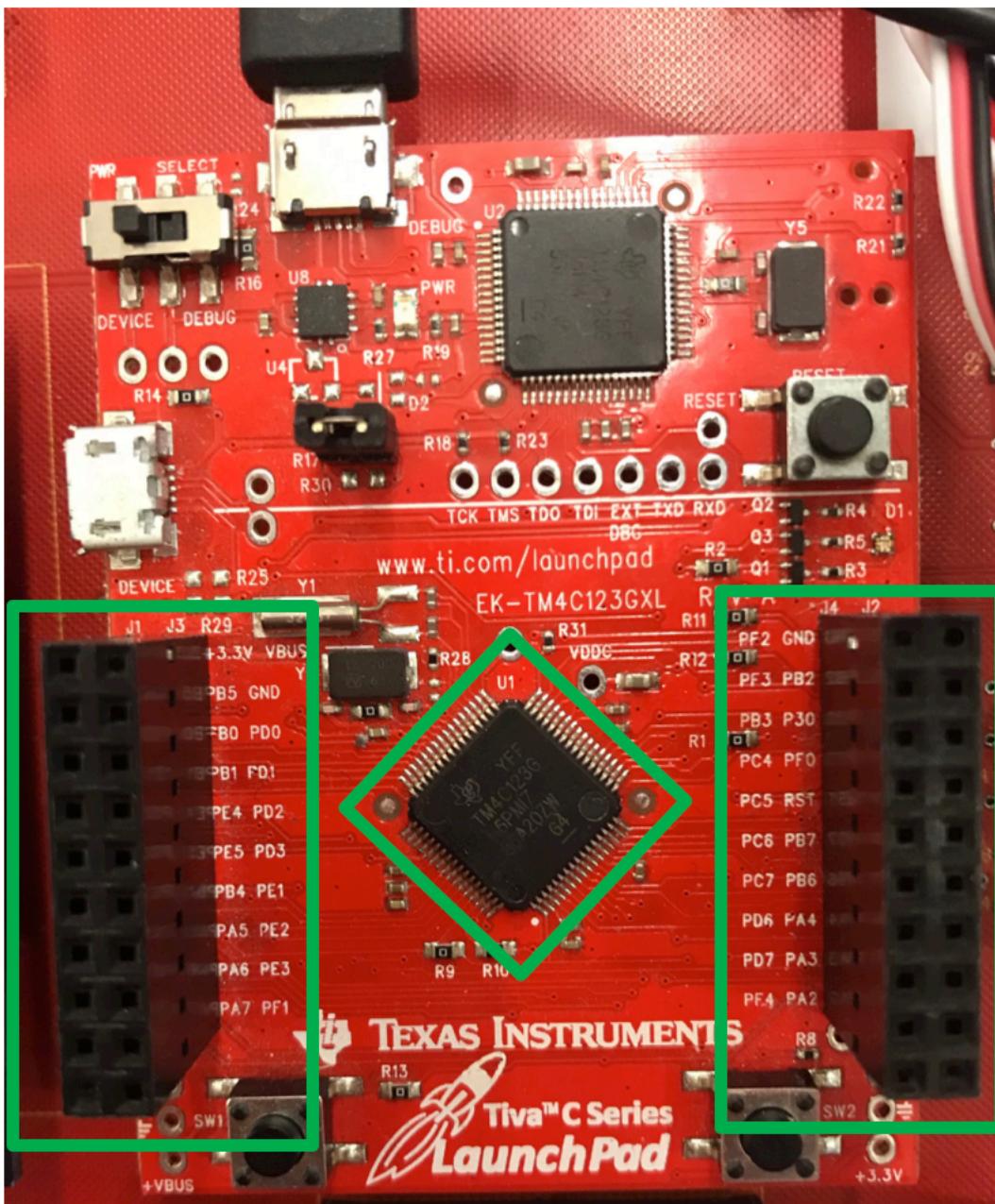
Note that these sensors are built into the iRobot unit, and iRobot commands must be used to access them. There are other sensors and I/O devices mounted outside of the unit that we will access directly through microcontroller I/O ports.

You should familiarize yourself with the components of the CyBot. Some of the more important components are shown in the diagram below.



2. The **TI Tiva Launchpad board** has a TM4C123GXL microcontroller, which is an ARM-based microcontroller. The microcontroller has on-chip memories and I/O devices. It has pins (I/O ports) to access external I/O devices (such as sensors).

The I/O port pin names are printed on the board next to the pin headers. They have been highlighted in green in the diagram. The microcontroller is the square chip in between.



Here is a diagram that shows the I/O port pin names in relation to pins of the microcontroller chip package.

64 package pins
allow software to
access the world
outside of the chip

6 GPIO Ports
• A – F
• Each port 8-bits

**Many GPIOs have
alternate functions**

