Oral Defense Info

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1 QTI

- **QTI**- *Charge Transfer Infrared*
- Aduino measures the time it takes for the QTI's capacitor to decay, thereby measuring a rate of charge transfer through an infrared phototransistor. This rate indicates how much infrared is reflecting off a nearby surface.
- In a digital setup (what we have): capacitor
- Can be used with both analog and digital outputs

2 XBEE

- XBEE based on IEEE 802.15.4-2003 networking protocol
- Designed to form networks with star, cluster tree or mesh topologies, where there is a hierarchy of devices and one coordinator is always necessary.
- High speed data transfer rates: asynchronous data (data can be transmitted intermittently rather than at a steady stream, no clock signal required) at 1200-9600 bps
- Line of sight range up to 250 feet (depending on operating conditions)
- Works at 433 MHz radio band
- Pins (1-6): GND, VIN, Serial Data, transmit/receive select pin (low=receive, high=transmit), low-power mode, received signal strength indicator

3 RFID

- 2400 baud serial rate
- General concept: radio fires up, provides enough power to a very small microprocessor to turn on, transmit a small string. String is detected and stored.
- can detect up to 4 inches away
- Sensor can be used to read passive 125 kHz RFID tags
- pins (0-4): VCC (around 5V), enable (low=on, high=off), serial out, GND
- 8 data bits, 1 stop bit, least-significant bit first

4 Ultrasonic Sensor

- Range: 2cm to 3m
- pins: GND, 5V, signal
- transmits around 40 kHz
- Sends 2-5μs burst, waits for echo holdoff of 750μs, echo return pulse will be 115μs -18.5ms, will wait 200μs until next measurement

5 Servos

- We have continuous rotation servomotors, controlled by PWM signals every 20ms that last from 1.3 to 1.7 ms